SportCruiser

Pilot's Operating Handbook

Airplane Registration Number: **N427R**

Airplane Serial Number: **P1001079**

Czech Sport Aircraft a.s. Distribution Inc.

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SportCruiser aircraft

is designed and manufactured by:

CZECH
SPORT AIRCRAFT

Czech sport aircraft a.s.
Na Záhonech 1177/212, 686 04 Kunovice
Czech Republic

www. czechsportaircraft.com; office@czechsportaircraft.com
Fax: +420 576 519 394, Phone: +420 576 514 034 (Sales Dept.)

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MAIN 27 PSI

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LIST OF ABBREVIATIONS

ADI	Attitude direction indicator	
ALT	Altitude or Altimeter	
ATC	Air Traffic Control	
ASI	Airspeed Indicator	
bar	Pressure unit	*(1 bar = 14.5037 psi)*
BEACON	Anti-collision beacon	
°C	Temperature in degree of Celsius	*(1°C = (°F - 32) / 1.8)*
CAS	Calibrated Airspeed	
CDI	Course deviation indicator	
CHT	Cylinder head temperature	
COMM	Communication transceiver	
EFIS	Electronic Flight Instrument System	
ELT	Emergency Locator Transmitter	
EMS	Engine Monitoring System	
°F	Temperature in degree of Fahrenheit	*(1°F = (°C x 1.8) + 32)*
ft	Foot or feet	*(1 ft = 12 in = 0.305 m = 305 mm)*
fpm	Vertical speed in feet per minute	*(1 fpm = 0.0051 m/s)*
GPS	Global Positioning System	
hp	Power unit	*(1 hp = 0.7457 kW)*
IAS	Indicated Airspeed	
IC	Intercom	
IFR	Instrument Flight Rules	
in	Inch	*(1 in = 25.4 mm)*
ISA	International Standard Atmosphere	
KCAS	Calibrated Airspeed in Knots	
kg	Kilogram	*(1 kg = 2.205 lb)*
KIAS	Indicated Airspeed in Knots	
km	kilometer	*(1 km = 1000 m = 0.54 NM = 0.621 SM)*
km/h	Speed in kilometers per hour	*(1 km/h = 0.54 knots = 0.621 mph = 0.278 m/s)*
knot	Speed in NM per hour	*(1 knot = 1.151 mph = 1.852 km/h = 0.514 m/s)*
kW	Power unit	*(1 kW = 1.341 hp)*
l	Liter	*(1 l = 0.22 UK gal = 0.264 US gal)*
lb	Pound	*(1 lb = 0.454 kg)*
lbf	Force unit	*(1 lbf = 4.448 N)*
m	Meter	*(1 m = 1000 mm = 3.28 ft = 39.37 in)*
mm	Millimeter	*(1 mm = 0.03937 in)*
MAC	Mean Aerodynamic Chord	
max.	Maximum	
min.	Minimum or minute	
mph	Speed in statute miles per hour	*(1 mph = 0.87 knots = 1.61 km/h)*
m/s	Speed in meters per second	*(1 m/s = 196.8 fpm = 1.944 knots = 3.6 km/h)*

N	Newton - force unit	*(1 N = 0.225 lbf)*
NM	Nautical mile	*(1 NM = 1,852 m)*
OFF	System is switched off or control element is in off-position	
ON	System is switched on or control element is in on-position	
OAT	Outside Air Temperature	
POH	Pilot Operating Handbook	
psi	Pressure unit - pound per square inch	*(1psi = 0.0689bar)*
rpm	Revolutions per minute	
s or sec	Second	
SM	Statute Mile	*(1SM = 1,609 m)*
US gal	US gallon	*(1 US gal = 0.83 UK gal = 3.785 l)*
V	Volt	
VFR	Visual Flight Rules	
VMC	Visual Meteorological Conditions	
VSI	Vertical Speed Indicator	
VTU	Vertical tail unit	
V_A	Maneuvering airspeed	
V_{FE}	Maximum flap extended speed	
V_{NE}	Never exceed speed	
V_{NO}	Maximum designed cruising speed	
V_{SO}	Stall speed with wing flaps in extended position	
V_{S1}	Stall speed with wing flaps in retracted position	
V_X	Best angle of climb speed	
V_Y	Best rate of climb speed	

ASTM STANDARDS

The SportCruiser aircraft is designed and built according to following ASTM LSA standards:

ASTM F 2245 – 09
Standard Specification for Design and performance of a Light Sport Airplane

ASTM F 2279 – 10
Standard Practice for Quality Assurance in Manufacture of Fixed Wing Light Sport Aircraft

ASTM F 2295 – 10
Standard Practice for Continued Operational Safety Monitoring of a Light Sport Aircraft

ASTM F 2316 – 08
Standard Specification for Airframe Emergency Parachutes for Light Sport Aircraft

ASTM F 2746 – 09
Standard Specification for Pilot's Operating Handbook (POH) for Light Sport Airplane

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CONTACT INFORMATION

CZECH
SPORT AIRCRAFT

Czech sport aircraft a.s.
Na Záhonech 1177/212, 686 04 Kunovice
Czech Republic

www. czechsportaircraft.com; office@czechsportaircraft.com
Fax: +420 576 519 394, Phone: +420 576 514 034 (Sales Dept.)

CONTACT INFORMATION FOR RECOVERY OF CERTIFICATION DOCUMENTATION:

Czech Sport Aircraft a.s. Distribution Inc.

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SECTION 1

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1. GENERAL INFORMATION

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1. GENERAL INFORMATION

This Pilot's Operating Handbook has been prepared to provide pilots with information for the safe and efficient operation of the *SportCruiser* aircraft and contains 9 sections. It also contains supplementary information considered to be important by the aircraft manufacturer. The Aircraft Flight Training Supplement is a part of this handbook too.

Date of issue is written in the yy/mm/dd format.

NOTE

All airspeeds shown.in the POH are IAS, except of shown otherwise.

Warnings, Cautions and Notes

The following definitions apply to warnings, cautions and notes in the Pilot's Operating Handbook.

WARNING

Means that the non-observation of the corresponding procedure leads to an immediate or important degradation of the flight safety i.e. to injury or death of persons.

CAUTION

Means that the non-observation of the corresponding procedure leads to a minor or possible long term degradation of the flight safety.

NOTE

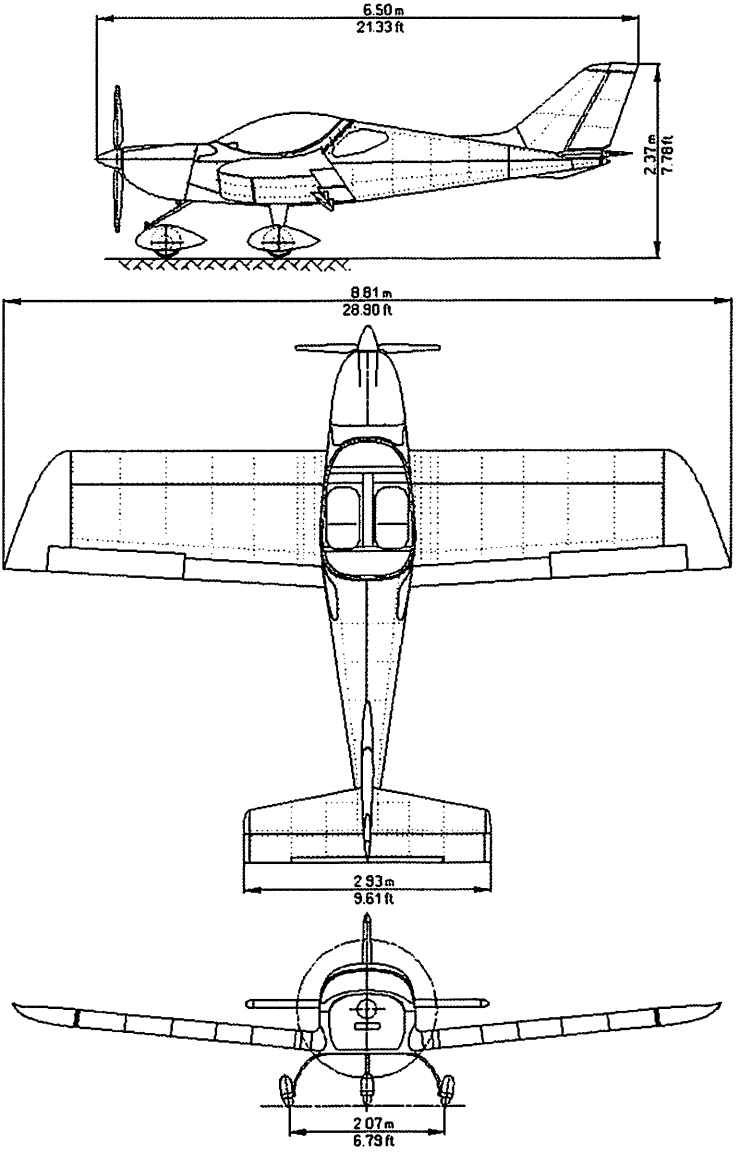
Draws attention to any special item not directly related to safety but which is important or unusual.

1.1 Airplane specification

SportCruiser is the airplane intended especially for recreational and cross-country flying, and non-aerobatics operation.

SportCruiser is a single-engine, all metal, low-wing monoplane of semi-monocoque structure with two side-by-side seats. The airplane is equipped with a fixed tricycle undercarriage with castering nose wheel.

Aircraft layout:



Main airplane dimensions:

Wing span	*28.90 [ft]*	*(8.81 [m])*
Length	*21.33 [ft]*	*(6.50 [m])*
Height	*7.78 [ft]*	*(2.37 [m])*
Wing area	*132.3 [sq ft]*	*(12.3 [m^2])*
Wing loading	*10 [lb/sq ft]*	*(49 [kg/m^2])*
Cockpit width	*46 [in]*	*(1.17 [m])*

Flight control surfaces travel:

Rudder	*30°* to each side
Elevator	*+ 28°/- 25°*
Aileron	*+ 20°/- 15°*
Flaps	*0° to 30°*
Aileron trim	*+ 20°/- 20°*
Elevator trim	*+ 22°/- 28°*

Engine:

Manufacturer	BRP-Rotax GmbH&Co.KG
Model number	912ULS
Maximum horsepower rating	*98.6 hp (73.5 kW) at 5,800 RPM*
Cooling	liquid and air
Type	4-stroke, 4 cylinder, horizontally opposed, spark ignition engine with one central camshaft-push-rod-OHV

Propeller:

Manufacturer	WOODCOMP s.r.o.	
Model number	KLASSIC 170/3/R	
Number of blades	*3*	
Diameter	*68 [in]*	*1,720 [mm]*
Pitch setting	*17.5 ± 0.5°*	
Type	three composite blades, ground adjustable	

1.2 Summary of performances

Weights:

Max. takeoff and landing weight	*1,320 [lb]*	*(600 [kg])*
Max. weight of fuel	*180 [lb]*	*(82 [kg])*
Max. baggage weight in rear fuselage	*40 [lb]*	*(18 [kg])*
Max. baggage weight in each wing locker	*44 [lb]*	*(20 [kg])*
Empty weight (minimum equipment)	*760 [lb]*	*(345 [kg])*

NOTE
Actual empty weight is shown in Section 9, Supplement No. 02

Wing loading	*10 [lb/sq ft]*	*(49 [kg/m^2])*
Power loading	*13.39 [lb/hp]*	*(8.15 [kg/kW])*

Speeds:

Maximum at sea level	*119 [knot]*	*(137 [mph])*
Cruise, 75% power at 3,000 ft	*93 [knot]*	*(107 [mph])*

Range and endurance:

Range	*516 [NM]*	*(594 [SM])*
Endurance	*5:25 [h:mm]*	

Conditions:

Usable fuel	*29.85 [US gal]*	*(113 [liter])*
75% power of engine	*5,000 RPM*	
Altitude	*3,000 [ft]*	
Reserve	*30 minutes*	

Rate of climb:

At sea level	*825 [fpm]*	
Best angle of climb speed (v_x)	*56 [knot]*	*(64 [mph])*
Best rate of climb speed (v_y):	*62 [knot]*	*(71 [mph])*

Stall speeds:

V_{S0} – flaps down, power - idle	*32 [knot]*	*(37 [mph])*
V_{S1} – flaps up, power - idle	*39 [knot]*	*(45 [mph])*

Fuel:

Total fuel capacity	*30.12 [US gal]*	*(114 [liter])*
Total usable fuel	*29.85 [US gal]*	*(113 [liter])*
Approved types of fuel	see chapter 2.11	

Engine power:

Maximum power at *5,800 RPM*	*98.6 [hp]*	*(73.5 [kW])*
Max. continuous power at *5,500 RPM*	*92.5 [hp]*	*(69 [kW])*

SECTION 2

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2. LIMITATIONS

CAUTION

*Airspeeds values are valid for standard **AVIATIK WA037383 pitot-static probe.***

2.1 Airspeed indicator range markings

NOTE

The stated stall speeds are valid for all flight altitudes.

Marking	IAS value or range		Significance
	knot	*mph*	
White arc	*32-75*	*37-86*	Flap Operating Range.
Green arc	*39-108*	*45-124*	Normal Operating Range.
Yellow arc	*108-138*	*124-158*	Maneuvers must be conducted with caution and only in smooth air.
Red line	*138*	*158*	Maximum speed for all operations.

2.2 Stalling speeds at maximum takeoff weight

Conditions: Weight: MTOW Engine: idle	Wing flaps pos.	IAS		CAS		Altitude loss at recovery
		knot	*mph*	*knot*	*mph*	*ft*
Wing level stall	0°	*39*	*45*	*43*	*49*	*65*
	15°	*35*	*40*	*39*	*45*	*49*
	30°	*32*	*37*	*37*	*43*	*33*
Coordinated turn 30° bank	0°	*42*	*48*	*46*	*53*	*82*
	15°	*38*	*44*	*42*	*48*	*66*
	30°	*35*	*40*	*39*	*45*	*49*

2.3 Flap extended speed range - V_{S0} to V_{FE}

Flap operating range *(IAS)*:

32 - 75 [knot] (37 - 86 [mph])

2.4 Maneuvering speed - V_A

Maneuvering speed *(IAS) at 1,320 [lb]*:

88 [knot] (101 [mph])

Maneuvering speed *(IAS) at 900 [lb]*:

70 [knot] (80 [mph])

2.5 Maximum structural cruising speed – V_{NO}

Maximum structural cruising speed *(IAS)*:

108 [knot] (124 [mph])

2.6 Never exceed speed - V_{NE}

Never exceed speed *(IAS)*:

138 [knot] (158 [mph])

2.7 Service ceiling

Service ceiling ..... *14,378 [ft]*

2.8 Load factors

Maximum positive limit load factor..... *+ 4 g*
Maximum negative limit load factor ..... *- 2 g*

2.9 Approved maneuvers

The *SportCruiser* is approved for normal and below listed maneuvers:

- Steep turns not exceeding *60°* bank
- Lazy eights
- Chandelles
- Stalls (except whip stalls)

2.10 Operating weights and loading

Max. takeoff weight	*1,320 [lb]*	*(600 [kg])*
Max landing weight	*1,320 [lb]*	*(600 [kg])*
Max. weight of fuel	*180 [lb]*	*(82 [kg])*
Max. baggage weight in rear fuselage	*40 [lb]*	*(18 [kg])*
Max. baggage weight in each wing locker	*44 [lb]*	*(20 [kg])*
Empty weight (minimum equipment)	*760 [lb]*	*(345 [kg])*

NOTE

Actual empty weight is shown in Section 9, Supplement No. 02

WARNING

Do not exceed maximum takeoff weight *1,320 [lb] (600 [kg])* !

Number of seats	*2*	
Minimum crew	*1* pilot on the left seat	
Minimum crew weight	*95 [lb]*	*(43 [kg])*
Maximum crew weight on each seat	*253 [lb]*	*(115 [kg])*

2.11 Fuel

Fuel volume:

Wing fuel tanks capacity	*2x15.06 [US gal]*	*(2x57 [liter])*
Total fuel capacity	*30.12 [US gal]*	*(114 [liter])*
Unusable fuel	*2x0.13 [US gal]*	*(2x0.5 [liter])*
Total usable fuel	*29.85 [US gal]*	*(113 [liter])*

Recommended fuel type:

(Refer to the ROTAX Operator's manual section 10.2.2 Fuel, Rotax Service Instruction SI-912-016)

MOGAS

European standard	- min. RON 95, EN 228 Super, EN 228 Super plus
US standard	- ASTM D4814
Canadian standard	- min. AKI 91, CAN/CGSB-3.5 Quality 3

CAUTION

Fuels that contain more than 5% ethanol blend have not been tested and are not permitted for use.

AVGAS

US standard - AVGAS 100 LL (ASTM D910)

AVGAS 100 LL places greater stress on the valve seats due to its high lead content and forms increased deposits in the combustion chamber and lead sediments in the oil system. Thus it should only be used in case of problems with vapor lock or when other types of gasoline are unavailable.

2.12 Engine operating speeds and limits

Engine Model:		ROTAX 912 ULS
Engine Manufacturer:		Bombardier-Rotax GMBH
Power	*Max. takeoff:*	98.6 hp *(73.5 kW) at 5,800 rpm (max. 5 min.)*
	Max. continuous:	92.5 hp *(69 kW) at 5,500 rpm*
	Cruising (75%):	68.4 hp *(51 kW) at 5,000 rpm*
Engine RPM	*Max. takeoff:*	5,800 rpm *(max. 5 min)*
	Max. continuous:	5,500 rpm
	Cruising (75%):	5,000 rpm
	Idling:	1,400 rpm *(minimum)*
Oil pressure	*Minimum:*	12 psi *(0.8 bar) below 3,500 rpm*
	Maximum:	102 psi *(7 bar) cold engine starting*
	Optimum:	29 - 73 psi *(2 - 5 bar) above 3,500 rpm*
Oil temperature	*Minimum:*	122° F *(50° C)*
	Maximum:	266° F *(130° C)*
	Optimum:	194 - 230° F *(90 - 110° C)*
Cylinder head temper. (CHT)	*Minimum:*	122° F *(50° C)*
	Maximum:	275° F *(135° C)* *
Exhaust gas temperature (EGT)	*Nominal:*	1,472° F *(800° C)*
	Maximum:	1,562° F *(850° C)*
	Max. takeoff:	1,616° F *(880° C)*
Fuel press.	*Minimum:*	2.2 psi *(0.15 bar)*
	Maximum:	5.8 psi *(0.4 bar)*

* See the Rotax Operator's manual section 10.1.2 Operating speeds and limits and section 10.2.1 Coolant, Rotax Installation manual section 12 Cooling system, Rotax Service Instruction SI-912-016, POH Section 8, paragraph 8.5.3 Coolant and Section 9, Supplement No. 02. Type of coolant used in engine.

2.13 Engine instruments markings

Rotax 912ULS 73.5 [kW] (98.6 [hp])	Minimum Limit (red line)	Caution Range (yellow arc)	Normal Operating Range (green arc)	Caution Range (yellow arc)	Maximum Range (red line)
Engine speed [RPM]	-	0-1,400	1,400-5,500	5,500-5,800	5,800
Oil Pressure	12 psi (0.8 bar)	12-29 psi (0.8-2 bar)	29-73 psi (2-5 bar)	73-102 psi (5-7 bar)	102 psi (7 bar)
Oil Temperature	122°F (50°C)	122-194°F (50-90°C)	194-230°F (90-110°C)	230-266°F (110-130°C)	266°F (130°C)
Cylinder head Temperature (CHT)	-	-	122-275°F (50-135°C)	-	275°F (135°C)
Exhaust Gas Temp. (EGT)	-	752-932°F (400-500°C)	932-1,562°F (500-850°C)	1,562-1,616°F (850-880°C)	1,616°F (880°C)
Fuel Pressure	2.2 psi (0.15 bar)	-	2.2-5.8 psi (0.15-0.4 bar)	-	5.8 psi (0.4 bar)
Manifold Pressure (MAP)	-	-	10-29 inHg	-	29 inHg

2.14 Other limitations

- ***No smoking on board of the aircraft!***
- ***Approved for Day VFR flights only.***
- ***Flight in rain***

  When flying in the rain, no additional steps are required. Aircraft qualities and performance are not substantially changed. However **VMC must be maintained !**

- ***Minimum instruments and equipment list for Day VFR flights:***
  - Airspeed indicator
  - Altimeter
  - Compass (is not required by ASTM F 2245)
  - Fuel quantity indicator
  - Tachometer (RPM)
  - Engine instruments as required by the engine manufacturer :
    - *Oil temperature indicator*
    - *Oil pressure indicator*
    - *Cylinder head temperature indicator*
  - Safety harness for every used seat
- ***Additional instruments and equipment list for Night VFR flights:***
  - Attitude indicator
  - Instrument lights
  - Position Lights
  - Anti-collison light
  - Landing light

WARNING

IFR FLIGHTS AND INTENTIONAL FLIGHTS UNDER ICING CONDITIONS ARE PROHIBITED!

WARNING

EMERGENCY PARACHUTE APPROVED FOR UP TO MTOW 1,350 LBS AND MAX. VELOCITY 120 KNOTS!

WARNING

MINIMUM 1.58 US GAL (6 LITRES) OF FUEL QUANTITY ALLOWS APPROXIMATELY 15 MINUTES OF SAFE OPERATION!

CAUTION

Install air intake shields in front of water and oil cooler, if ambient air temperature is 32°F (0°C) or lower.

2.15 Limitation placards and markings

Operating limitation on instrument panel

AIRSPEEDS:	
V_{NE}	138 kts
V_A	88 kts
V_{FE}	75 kts
V_{SO}	32 kts

WARNING !
DO NOT EXCEED MAXIMUM
TAKEOFF WEIGHT: *600kg/1320lbs*

WARNING !
IFR FLIGHTS AND INTENTIONAL FLIGHTS
UNDER ICING CONDITIONS ARE PROHIBITED

Operating limitation in baggage space

MAX. BAGGAGE WEIGHT: *18kg/40lbs*

MAX. WEIGHT IN WING LOCKER: *20kg/44lbs*

Passenger warning

THIS AIRCRAFT WAS MANUFACTURED IN ACCORDANCE WITH LIGHT SPORT AIRCRAFT AIRWORTHINESS STANDARDS AND DOES NOT CONFORM TO STANDARD CATEGORY AIRWORTHINESS REQUIREMENTS.

Prohibited maneuvers

NO INTENTIONAL SPINS !
AEROBATICS PROHIBITED !

2.16 Miscellaneous placards and markings

PILOT HEADSET

FUEL CAPACITY:
57 Litres/15 US Gal.
MOGAS RON 95/AKI 91
AVGAS 100 LL

MUSIC IN COPILOT HEADSET

FUEL DRAIN ↘

AEROSHELL OIL
SPORT PLUS 4

↑ OPEN

CLOSE ↓

↑MAX POWER ↓IDLE

↑OFF CHOKE ↓ON

FLAPS DOWN

FLAPS UP

PEDAL SETTING ↘

↙ PEDAL SETTING

CANOPY OPENED

CANOPY CLOSED

BAGGAGE COMPARTMENT - A

BAGGAGE COMPARTMENT - B

NO STEP

NO PUSH

If BRS rescue system is installed:

- located on the both sides of fuselage between canopy and rear window

- located in place rocket egress

CAUTION

The owner (operator) of this airplane is responsible for the readability of placards during the aircraft service life.

SECTION 3

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3. EMERGENCY PROCEDURES

3.1 General information

This section provides checklists and amplified procedures for coping with various emergencies that may occur. Emergencies caused by aircraft or engine malfunction are extremely rare if proper pre-flight inspections and maintenance are practiced.

However, should an emergency arise, the basic guidelines described in this section should be considered and applied as necessary to correct the problem.

CAUTION
*Airspeeds values are valid for standard **AVIATIK WA037383 pitot-static probe.***
*These emergency procedures are valid for **WOODCOMP KLASSIC 170/3/R** three composite blades ground adjustable propeller.*

3.2 Airspeeds for Emergency procedures

Engine failure after takeoff ..... *60 [knot] (70 [mph])*
(flaps in T/O or retracted position)

Maneuvering speed at *1,320 [lb] (600 [kg])* ..... *88 [knot] (101 [mph])*
Maneuvering speed at *900 [lb] (408 [kg])* ..... *70 [knot] (80 [mph])*
(flaps retracted)

Gliding speed ..... *60 [knot] (70 [mph])*
(flaps retracted)

Precautionary landing with engine power ..... *60 [knot] (70 [mph])*
(flaps in any position)

Emergency landing without engine power ..... *60 [knot] (70 [mph])*
(flaps in any position)

3.3 Engine failure during takeoff run

1. Throttle - idle
2. Ignition switch - switch OFF
3. Brakes - apply

3.4 Engine failure after takeoff

1. Push control stick forward
2. Speed - gliding at *60 [knot] (70 [mph])*
3. Altitude - below *150 [ft]* : land in takeoff direction
   - over *150 [ft]* : choose a landing area
4. Landing area - choose free area without obstacles
5. Wind - find direction and velocity
6. Flaps - extend as necessary
7. Trim - adjust
8. Safety harness - fasten
9. Fuel Selector - close
10. Ignition switch - switch OFF
11. Master switch - switch OFF before landing
12. Land

3.5 Loss of engine power in flight

1. Push control stick forward
2. Speed - gliding at *60 [knot] (70 [mph])*
3. Altitude - in accordance with actual altitude search for a suitable place to safe land
4. Landing area - choose free area without obstacles
5. Wind - find direction and velocity
6. Emergency landing - perform according to *3.7*

3.6 *In-flight engine starting*

1. Switches - switch OFF unnecessary electrical equipment
2. Master switch - switch ON
3. Fuel Selector - turn on *(to tank with more quantity of fuel)*
4. Throttle - idle
5. Fuel pump - switch ON
6. Ignition switch - hold activated to start the engine
7. After engine starting - fuel pump - switch OFF
   - other switches - switch ON as necessary

3.7 *Emergency landing without engine power*

Emergency landings are generally carried out in the case of engine failure and the engine cannot be re-started.

1. Speed - adjust for optimum gliding
   60 [knot] (70 [mph])
2. Trim - adjust
3. COMM - giving location and intentions - if possible
4. Flaps - extend as necessary
5. Fuel Selector - close
6. Ignition switch - switch OFF
7. Master switch - switch OFF
8. Safety harness - fasten
9. Perform approach without steep turns and land on chosen landing area

3.8 *Precautionary landing with engine power*

A precautionary landing is generally carried out in the cases where the pilot may be disorientated, the aircraft has no fuel reserve or possibly in bad weather conditions.

1. Choose landing area, determine wind direction
2. Report your intention to land and landing area location if a COMM is installed in the airplane

3. Perform low-altitude passage into wind over the right-hand side of the chosen area with flaps extended as needed and thoroughly inspect the landing area
4. Perform circle pattern
5. Perform approach at increased idling with flaps fully extended at *60 [knot] (70 [mph])*
6. Reduce power to idle when flying over the runway threshold and touch-down at the very beginning of the chosen area
7. After stopping the airplane switch OFF all switches, shut OFF the fuel selector, lock the airplane and seek assistance

NOTE

Watch the chosen area steadily during precautionary landing.

3.9 Engine fire during start

1. Fuel Selector - close
2. Throttle - full power
3. Ignition switch - switch OFF
4. Master - switch OFF
5. Leave the airplane
6. Extinguish fire by yourself or call for a fire-brigade if you cannot do it

3.10 Engine fire in flight

1. Heating - close
2. Fuel Selector - close
3. Throttle - full power
4. Ignition switch - switch OFF after the fuel in carburetors is consumed and engine shut down
5. Master switch - switch OFF
6. Emergency landing - perform according to *3.7* as soon as possible
7. Leave the airplane
8. Extinguish fire by yourself or call for a fire-brigade if you cannot do it

NOTE
Estimated time to pump fuel out of carburetors is about 30 [sec].

WARNING
Do not attempt to re-start the engine!

3.11 Electrical fire in flight

1. Master switch - switch OFF
2. Other switches - switch OFF
3. Heating - close
4. Ventilation - open
5. Use the fire extinguisher *(if installed)*
6. Emergency landing - perform according to *3.7* as soon as possible

3.12 Generator failure

- GEN "OFF" highlighted red and blinking, bringing up the alarm bar at the bottom of the EMS screen with message, triggering the external EMS warning light and audio alert
- Voltmeter (on EMS screen) indicates voltage under 12.5 V
- Ammeter (on EMS screen) permanently indicates negative current independently on engine RPM

1. Engine RPM - increase above 3000 RPM

If the above generator failure indication persists:

2. Switch OFF - all unnecessary electrical equipment
3. Switch ON - Master, Instruments and Avionics
4. Voltmeter - monitor voltage of battery
5. Land as soon as possible at nearest suitable airport

CAUTION
Use transceiver, transponder and GPS as necessary, short time only.
Operating time of battery in good condition is up to 15 minutes.
The engine runs independently on generator functioning.

3.13 Inadvertent spin recovery

There is no uncontrollable tendency of the airplane to enter into a spin provided the normal piloting techniques are used.

Inadvertent spin recovery technique:

1. Throttle - idle
2. Lateral control - ailerons neutralized
3. Rudder pedals - full opposite rudder
4. Rudder pedals - neutralize rudder immediately when rotation stops
5. Longitudinal control - neutralizes or push forward and recovery dive

WARNING
INTENTIONAL SPINS ARE PROHIBITED!

3.14 Inadvertent icing encounter

CAUTION
Aircraft is approved to operate in VMC condition only!

1. Leave icing area — turn back or change altitude to reach area with higher outside air temperature
2. Carburetor heating — open
3. Cabin heating — open
4. Increase RPM to minimize ice build-up on propeller blades
5. Continue to move control surfaces to maintain their moveability
6. In case of icing on the leading edge of wing, the stall speed will increase
7. In case of icing on the pitot probe, erroneous indicating of the airspeed and altimeter
8. If you fail to recover the engine power or normal flight conditions, land on the nearest airfield *(if possible)* or depending on the circumstances, perform a precautionary landing according to *3.8* or emergency landing according to *3.7*

NOTE
The carburetor icing and air filter icing shows itself through a decrease in engine power and an increase of engine temperatures.

NOTE

Use carburetor heating during lengthy descents and in areas of possible carburetor icing.

3.15 Obstruction of air into engine filter

If the engine runs rough and power decrease, air filter can be clogged with some impurities e.g. dust or ice.

Perform:

1. Carburetor heating - open
2. Check engine running and monitor engine instruments
3. Land as soon as possible at nearest suitable airport

If you fail to recover the engine power, land on the nearest airfield *(if possible)* or depending on the circumstances, perform a precautionary landing according to *3.8*.

3.16 Engine vibration

If any forced aircraft vibrations appear, it is necessary:

1. To set engine speed to such power rating where the vibrations are lowest
2. To land on the nearest airfield or to perform a precautionary landing according to *3.8*

3.17 Landing with a flat tire

1. During landing keep the damaged wheel above ground as long as possible using the ailerons control
2. Maintain the direction on the landing roll out, applying rudder control

3.18 Landing with a defective landing gear

1. If the main landing gear is damaged, perform touch-down at the lowest practicable speed and if possible, maintain direction during landing run
2. If the nose wheel is damaged perform touch-down at the lowest practicable speed and hold the nose wheel above the ground by means of the elevator control as long as possible

3.19 Inadvertent canopy opening during takeoff

- During takeoff – aircraft rotation occurs, the canopy opens approximately *2 in (50 mm)*.
- During climb and descent with airspeed at *60-75 knots (70-86 mph)*, the canopy stays opened *2-3.2 in (50-80 mm)*.
- During horizontal flight with airspeed at *60-80 knots (70-92 mph)*, the canopy stays opened *2-3.2 in (50-80 mm)*.
- In all above-mentioned cases – there are no flight problems, no vibrations, good aircraft control, and no change of flight characteristics.
- **It is not possible to close the canopy.**

Recommended procedure if the canopy opens during takeoff:

1. **DO NOT TRY TO CLOSE THE CANOPY!**
2. Continue the takeoff
3. Climb to the safe altitude
   - maintain airspeed at *65 knot (75 mph)*
4. Continue to fly the normal traffic pattern (circuit)
   - max. airspeed *75 knot (86 mph)*
5. Land
   - after stopping, close and lock the canopy

Recommendation: ***- Before takeoff, manually check the canopy is locked by pushing on the canopy upwards.***

CAUTION
During the flight, approach and landing – do not perform any slipping.

3.20 List of EMS alert alarms

HIGH RPM ALARM
HIGH MANIFOLD PRESSURE ALARM
HIGH OIL PRESSURE ALARM
LOW OIL PRESSURE ALARM
HIGH OIL TEMPERATURE ALARM
LOW OIL TEMPERATURE ALARM
HIGH EGT 1 / 2 ALARM
LOW EGT 1 / 2 ALARM
HIGH CHT 1 / 2 ALARM
LOW CHT 1 / 2 ALARM
LOW L / R FUEL TANK ALARM
HIGH FUEL PRESSURE ALARM
LOW FUEL PRESSURE ALARM
HIGH VOLTAGE ALARM
LOW VOLTAGE ALARM
HIGH CURRENT ALARM
LOW CURRENT ALARM

SECTION 4

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4. NORMAL PROCEDURES

This section provides checklists and recommended procedures for normal operation of the aircraft.

CAUTION

*Airspeeds values are valid for standard **AVIATIK WA037383 pitot-static probe.***

*These normal procedures are valid for **WOODCOMP KLASSIC 170/3/R** three composite blades ground adjustable propeller.*

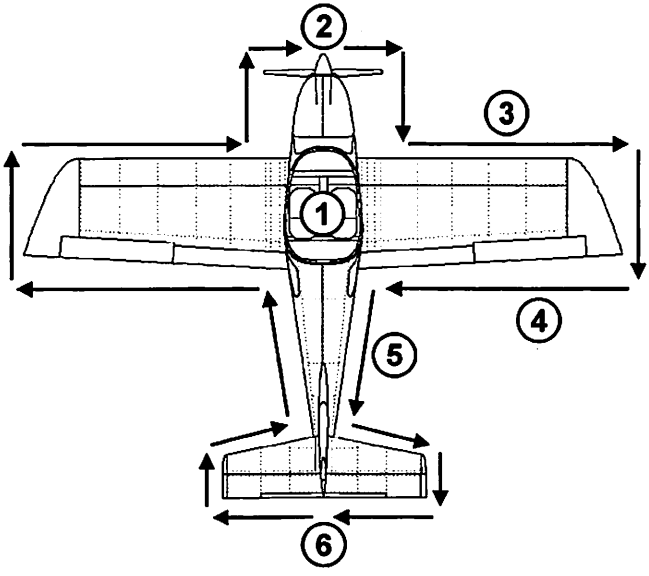
4.1 Preflight check

Carry out the pre-flight inspection every day prior to the first flight or after airplane assembly. Incomplete or careless inspection can cause an accident. Carry out the inspection following the instructions in the Inspection Check List.

NOTE

The word "condition" in the instructions means a visual inspection of surface for damage deformations, scratching, chafing, corrosion or other damages, which may lead to flight safety degradation.

The manufacturer recommends carrying out the pre-flight inspection as follows:



Inspection Check List

①	– Ignition	- OFF
	– Master switch	- ON
	– Instruments switch	- ON, check fuel quantity on indicators
	– Avionics	- check condition
	– Control system	- visual inspection, function, clearance, free movement up to stops - check wing flaps operation - check trims operation
	– Master and Instr. switches	- OFF
	– Canopy	- condition of attachment, cleanness
	– Check cockpit for loose objects	
②	– Engine cowling condition	
	– Propeller and spinner condition	
	– Engine mount and exhaust manifold condition	
	– Oil quantity check - before this check, ensure Ignition OFF, then turn the propeller by hand in direction of engine rotation several times to pump oil from the engine into the oil tank (see the Rotax Operator's manual section 0.3.3)	
	– Coolant quantity check	
	– Visual inspection of the fuel and electrical system	
	– Fuel system draining	
	– Other actions according to the engine manual	
③	– Wing surface condition	
	– Leading edge condition	
	– Pitot head condition	
④	– Wing tip	- surface condition, attachment
	– Aileron	- surface condition, attachment, clearance, free movement
	– Wing flap	- surface condition, attachment, clearance
⑤	– Landing gear	- wheel attachment, brakes, condition and pressure of tires
	– Wing lower surface and fuselage bottom condition	
⑥	– Vertical tail unit	- condition of surface, attachment, free movement, rudder stops
	– Horizontal tail unit	- condition of surface, attachment, free movement, elevator stops
	– Check that left side the fuselage and wing is the same as right side.	

WARNING

Physically check the fuel level before each takeoff to make sure you have sufficient fuel for the planned flight.

WARNING

In case of long-term parking it is recommended to turn the engine several times (Ignition OFF!) by turning the propeller. Always handle by palm the blade area i.e. do not grasp only the blade edge. It will facilitate engine starting.

4.2 Engine starting

4.2.1 Before engine starting

1. Control system - free & correct movement
2. Canopy - clean, closed and locked
3. Safety harness - fasten
4. Brakes - fully applied

4.2.2 Engine starting

NOTE: Start the engine according to procedure in Rotax Operator's manual.

1. Throttle - idle
2. Choke - cold engine - ON (fully pulled and hold)
   - warm engine - OFF
3. Fuel selector - turn on *(left or right fuel tank in accordance with fuel tanks filling)*
4. Master switch - switch ON
5. Fuel pump - switch ON
6. Propeller area - clear
7. Ignition switch - hold activated to start the engine
8. After engine starting
   - Instrument - switch ON
   - Fuel pump - switch OFF
   - Avionics - switch ON
   - other switches - switch ON as necessary
9. Choke - gradually release during engine warming up
10. Throttle - maintain max. *2,500 [rpm]* for warming up

CAUTION

- *The starter should be activated for a maximum of 10 [sec], followed by 2 [min] pause for starter cooling.*
- *As soon as engine runs, adjust throttle to achieve smooth running at approx. 2,500 [rpm]. Check the oil pressure, which should increase within 10 [sec]. Increase the engine speed after the oil pressure has reached 29 [psi] (2 [bar]) and is steady.*
- *To avoid shock loading, start the engine with the throttle lever set for idling or 10 % open at maximum, then wait 3 [sec] to reach constant engine speed before new acceleration.*
- *Only one magneto should be switched ON (OFF) during ignition magneto check.*

4.2.3 Engine warm up, Engine check

Prior to engine check block the main wheels using chocks. Initially warm up the engine to *2,000 [rpm]* for approximately *2 [min]*, then continue to *2,500 [rpm]* till oil temperature reaches *122 [°F] (50 [°C])*. The warm up period depends on ambient air temperature.

Check both ignition circuits at *4,000 [rpm]* for Rotax 912 ULS. The engine speed drop during the time either magneto switched OFF should not exceed *300 [rpm]*. The max. engine speed drop difference between circuits L and R should be *115 [rpm]*.

NOTE

Only one magneto should be switched ON (OFF) during ignition magneto check.

Set max. power for verification of max. static engine speed *(5,000 ±100 [rpm])* with given propeller and engine parameters *(temperatures and pressures)*.

Check acceleration from idling to max. power. If necessary, cool the engine at *idle [rpm]* before shutdown.

CAUTION

The engine check should be performed with the aircraft heading upwind and not on a loose terrain (the propeller may suck grit which can damage the leading edges of blades).

4.3 Taxiing

Apply power and brakes as needed. Apply brakes to control movement on ground. Taxi carefully when wind velocity exceeds *20 [knot]*. Hold the control stick in neutral position.

4.4 Normal takeoff

4.4.1 Before takeoff

1. Altimeter - set
2. Trim - set neutral position
3. Control system - check free movement
4. Cockpit canopy - closed and locked

Recommendation: ***- Before takeoff, manually check the canopy is locked by pushing the canopy upwards.***

5. Safety harness - fastened
6. Fuel selector - turned ON *(left or right fuel tank)*
7. Ignition switch - switched-ON *(both magnetos)*
8. Wing flaps - extend as necessary

4.4.2 Takeoff

1. Brakes - apply to stop wheel rotation
2. Throttle - fully forward
3. Engine speed - check *(5,000 ±100 [rpm])*
4. Engine gauges - within limits
5. Brakes - release
6. Elevator - control stick pull
7. Nose wheel unstick - *32 [knot] (37 [mph])*
8. Airplane lift-off - *42 [knot] (48 [mph])*
9. Climb - after reaching airspeed *65 [knot] (75 [mph])*
10. Wing flaps - retract at safe altitude *(max. airspeed for flaps using is 75 [knot], 86 [mph])*

WARNING

Takeoff is prohibited if:

- *Engine is running unsteadily*
- *Engine instrument values are beyond operational limits*
- *Aircraft systems (e.g. brakes or controls) work incorrectly*
- *Crosswind velocity exceeds permitted limits (see Section 5 Performance, 5.7 Demonstrated wind performance)*

4.5 Climb

1. Throttle - fully forward
   (max. 5,800 [rpm] for max. 5 [min],
   max. continuous power *(5,500 [rpm])*
2. Airspeed - V_x = *56 [knot] (64 [mph])*
   - V_y = *62 [knot] (71 [mph])*
3. Trim - trim the airplane
4. Engine gauges - oil temperature, oil pressure and CHT within limits

CAUTION

If the cylinder head temperature or oil temperature and/or coolant temperature approaches or exceeds limits, reduce the climb angle to increase airspeed and possibly return within limits. If readings do not improve, troubleshoot causes other than high power setting at low airspeed.

4.6 Best angle of climb speed (V_x): *56 [knot] (64 [mph])*

4.7 Best rate of climb speed (V_y): *62 [knot] (71 [mph])*

4.8 Cruise

Refer to Section 5, for recommended cruising figures

4.9 Descend

1. Optimum glide speed - *60 [knot] (70 [mph])*

4.10 Approach

1. Approach speed - *60 [knot] (70 [mph])*
2. Throttle - as necessary
3. Wing flaps - extend as necessary
4. Trim - as necessary
5. Safety harness - tighten

CAUTION

It is not advisable to reduce the engine throttle control lever to minimum on final approach and when descending from very high altitude. In such cases the engine becomes under-cooled and a loss of power may occur. Descent at increased idle (approximately 3,000 [rpm]), speed between 60-75 [knot] (70-86 [mph]) and check that the engine instruments indicate values within permitted limits.

4.11 Normal landing

4.11.1 Before landing

1. Throttle - as necessary
2. Airspeed - *60 [knot] (70 [mph])*
3. Wing flaps - extend as necessary
4. Trim - as necessary

4.11.2 Landing

1. Throttle - idle
2. Touch-down on main wheels
3. Apply brakes - as necessary
   (after the nose wheel touch-down)

4.11.3 After landing

1. Throttle - engine rpm set as required for taxiing
2. Wing flaps - retract
3. Trim - set neutral position

4.11.4 Engine shut down

1. Throttle - idle
2. Instruments - engine instruments within limits
3. Switches - switch OFF - except ***Instrument*** and ***Master***
4. Ignition switch - turn key to switch OFF
5. Instrument switch - switch OFF
6. Master switch - switch OFF
7. Fuel Selector - close

CAUTION

Rapid engine cooling should be avoided during operation. This happens above all during aircraft descent, taxiing and low engine *[rpm]* or at engine shutdown immediately after landing. Under normal conditions the engine temperatures stabilize during descent, taxiing and at values suitable to stop engine by switching the ignition off. If necessary, cool the engine at *idle [rpm]* to stabilize the temperatures prior to engine shut down.

4.12 Short field takeoff and landing procedures

None

4.13 Balked landing procedures

1. Throttle - fully forward
   (max. 5,800 [rpm] for max. 5 [min],
   max. continuous power *(5,500 [rpm])*
2. Climb - after reaching
   65 [knot] (75 [mph])
3. Trim - adjust as necessary
4. Wing flaps - retract at safe altitude
   (max. airspeed for flaps using is
   75 [knot], 86 [mph])
5. Trim - adjust as necessary
6. Repeat circle pattern

4.14 Aircraft parking and tie-down

1. Ignition switch - OFF
2. Master switch - OFF
3. Fuel selector - close
4. Parking brake - use it as necessary (if installed)
5. Canopy - close, lock as necessary
6. Secure the airplane

NOTE

It is recommended to use parking brake (if installed) for short-time parking only, between flights during a flight day. After ending the flight day or at low temperatures of ambient air, do not use parking brake, but use the wheel chocks instead.

NOTE

Use anchor eyes on the wings and fuselage rear section to fix the airplane. Move control stick forward and fix it together with the rudder pedals. Make sure that the cockpit canopy is properly closed and locked. The anchoring before leaving the airplane is important if the airplane is not equipped with a parking brake.

SECTION 5

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5. PERFORMANCE

The presented data has been computed from actual flight tests with the aircraft and engine in good conditions and using average piloting techniques. If not stated otherwise, the performance stated in this section is valid for maximum takeoff weight *(1,320 [lb] / 600 [kg])* and under ISA conditions.

The performance shown in this section is valid for aircraft equipped with ***ROTAX 912 ULS*** engine with maximum power *98.6 [hp] (73.5 [kW])* and ***WOODCOMP KLASSIC 170/3/R*** three composite blades ground adjustable propeller with pitch setting *17.5°*.

CAUTION

Airspeeds values are valid for standard ***AVIATIK WA037383 pitot-static probe.***

5.1 Takeoff distances

Conditions: - Altitude: *0 ft* ISA
- Engine power: *full throttle*
- Flaps: *15°*

RUNWAY SURFACE	Takeoff run distance	Takeoff distance over *50 ft* obstacle
	ft	*ft*
CONCRETE	*463*	*1,270*
GRASS	*702*	*1,499*

5.2 Landing distances

Conditions: - Altitude: *0 ft* ISA
- Engine power: *idle*
- Flaps: *30°*
- Brakes fully depressed immediately after touch-down

RUNWAY SURFACE	Landing distance over *50 ft* obstacle	Landing run distance (braked)
	ft	*ft*
CONCRETE	*1,188*	*479*
GRASS	*1,109*	*364*

5.3 Rate of climb

Conditions: Engine: *full throttle* Flaps: *0°*	Best rate of climb speed Vy (IAS)		Rate of climb Vz
Altitude	*knot*	*mph*	*fpm*
0 ft	*62*	*71*	*825*
3000 ft	*62*	*71*	*685*
6000 ft	*62*	*71*	*540*
9000 ft	*62*	*71*	*355*

5.4 Cruise speeds

Altitude	Engine speed	IAS		CAS		TAS		MAP	Fuel consumption
ft	*rpm*	*knot*	*mph*	*knot*	*mph*	*knot*	*mph*	*in Hg*	*US gal/h*
1,000	4,200	*72*	*83*	*72*	*83*	*73*	*84*	*23.7*	*3.59*
	4,500	*81*	*93*	*80*	*92*	*81*	*93*	*24.6*	*4.15*
	4,800	*91*	*105*	*89*	*102*	*89*	*102*	*25.5*	*4.76*
	5,000	*96*	*110*	*94*	*108*	*95*	*109*	*26.1*	*5.15*
	5,300	*105*	*121*	*102*	*117*	*103*	*118*	*27.0*	*5.79*
	5,500	*112*	*129*	*108*	*124*	*109*	*125*	*27.7*	*6.26*
	5,700	*118*	*136*	*113*	*130*	*114*	*131*	*28.3*	*6.82*
3,000	4,200	*68*	*78*	*69*	*79*	*72*	*83*	*22.2*	*3.49*
	4,500	*78*	*90*	*77*	*89*	*80*	*92*	*23.0*	*4.04*
	4,800	*86*	*99*	*85*	*98*	*88*	*101*	*23.8*	*4.62*
	5,000	*93*	*107*	*91*	*105*	*94*	*108*	*24.3*	*5.02*
	5,300	*102*	*117*	*99*	*114*	*102*	*117*	*25.1*	*5.65*
	5,500	*108*	*124*	*104*	*120*	*108*	*124*	*25.5*	*6.16*
5,000	4,200	*65*	*75*	*66*	*76*	*71*	*82*	*20.5*	*3.41*
	4,500	*74*	*85*	*74*	*85*	*79*	*91*	*21.3*	*3.94*
	4,800	*83*	*95*	*82*	*94*	*87*	*100*	*22.1*	*4.54*
	5,000	*89*	*102*	*87*	*100*	*93*	*107*	*22.7*	*4.94*
	5,300	*97*	*112*	*95*	*109*	*101*	*116*	*23.5*	*5.57*
	5,500	*103*	*118*	*100*	*115*	*107*	*123*	*24.1*	*6.02*
7,000	4,200	*62*	*71*	*63*	*72*	*69*	*79*	*19.3*	*3.30*
	4,500	*69*	*79*	*70*	*81*	*77*	*89*	*20.0*	*3.86*
	4,800	*79*	*91*	*78*	*90*	*85*	*98*	*20.6*	*4.44*
	5,000	*84*	*97*	*83*	*95*	*91*	*105*	*21.2*	*4.86*
	5,300	*92*	*106*	*90*	*104*	*99*	*114*	*22.0*	*5.49*
	5,500	*98*	*113*	*95*	*109*	*105*	*121*	*22.5*	*5.89*
9,000	4,200	*57*	*66*	*59*	*68*	*67*	*77*	*18.4*	*3.22*
	4,500	*64*	*74*	*65*	*75*	*74*	*85*	*19.0*	*3.78*
	4,800	*73*	*84*	*73*	*84*	*83*	*95*	*19.6*	*4.33*
	5,000	*79*	*91*	*78*	*90*	*89*	*102*	*20.0*	*4.76*
	5,300	*86*	*99*	*85*	*98*	*97*	*112*	*20.5*	*5.39*
	5,500	*92*	*106*	*90*	*104*	*103*	*118*	*20.8*	*5.76*

5.5 RPM setting and fuel consumption

Altitude		ft	1,000					
Engine speed		rpm	4,200	4,500	4,800	5,000	5,300	5,500
Fuel consumption		US gal/h	3.59	4.15	4.76	5.15	5.79	6.26
		l/h	13.6	15.7	18.0	19.5	21.9	23.7
Airspeed	IAS	knot	72	81	91	96	105	112
		mph	83	93	105	110	121	129
	CAS	knot	72	80	89	94	102	108
		mph	83	92	102	108	117	124
	TAS	knot	73	81	89	95	103	109
		mph	84	93	102	109	118	125
Endurance and Range at 29.85 US gal (113 liters)								
Endurance		hh:mm	8:18	7:11	6:16	5:47	5:09	4:46
Range		NM	607	583	558	551	531	520
		SM	698	670	642	633	611	598
Endurance and Range at 23.78US gal (90 liters)								
Endurance		hh:mm	6:37	5:43	4:59	4:36	4:06	3:47
Range		NM	483	464	445	439	423	414
		SM	556	534	511	504	486	476
Endurance and Range at 15.85 US gal (60 liters)								
Endurance		hh:mm	4:24	3:49	3:19	3:04	2:44	2:31
Range		NM	322	309	296	292	282	276
		SM	371	356	341	336	324	317
Endurance and Range at 7.93US gal (30 liters)								
Endurance		hh:mm	2:12	1:54	1:39	1:32	1:22	1:15
Range		NM	161	155	148	146	141	138
		SM	185	178	170	168	162	159
Endurance and Range at 3.96 US gal (15 liters)								
Endurance		hh:mm	1:06	0:57	0:49	0:46	0:41	0:37
Range		NM	81	77	74	73	70	69
		SM	93	89	85	84	81	79

Altitude		ft	3,000					
Engine speed		rpm	4,200	4,500	4,800	5,000	5,300	5,500
Fuel consumption		US gal/h	3.49	4.04	4.62	5.02	5.65	6.16
		l/h	13.2	15.3	17.5	19.0	21.4	23.3
Airspeed	IAS	knot	68	78	86	93	102	108
		mph	78	90	99	107	117	124
	CAS	knot	69	77	85	91	99	104
		mph	79	89	98	105	114	120
	TAS	knot	72	80	89	95	103	109
		mph	83	92	101	108	117	124
Endurance and Range at 29.85 US gal (113 liters)								
Endurance		hh:mm	8:33	7:23	6:27	5:56	5:17	4:50
Range		NM	616	591	569	559	539	523
		SM	708	680	654	643	620	602
Endurance and Range at 23.78 US gal (90 liters)								
Endurance		hh:mm	6:48	5:53	5:08	4:44	4:12	3:51
Range		NM	490	471	453	445	429	417
		SM	564	541	521	512	494	479
Endurance and Range at 15.85 US gal (60 liters)								
Endurance		hh:mm	4:32	3:55	3:25	3:09	2:48	2:34
Range		NM	327	314	302	297	286	278
		SM	376	361	347	341	329	320
Endurance and Range at 7.93 US gal (30 liters)								
Endurance		hh:mm	2:16	1:57	1:42	1:34	1:24	1:17
Range		NM	163	157	151	148	143	139
		SM	188	180	174	171	165	160
Endurance and Range at 3.96 US gal (15 liters)								
Endurance		hh:mm	1:08	0:58	0:51	0:47	0:42	0:38
Range		NM	82	78	75	74	72	69
		SM	94	90	87	85	82	80

Altitude		ft	5,000					
Engine speed		rpm	4,200	4,500	4,800	5,000	5,300	5,500
Fuel consumption		US gal/h	3.41	3.94	4.54	4.94	5.57	6.02
		l/h	12.9	14.9	17.2	18.7	21.1	22.8
Airspeed	IAS	knot	65	74	83	89	97	103
		mph	75	85	95	102	112	118
	CAS	knot	66	74	82	87	95	100
		mph	76	85	94	100	109	115
	TAS	knot	71	79	87	93	101	107
		mph	82	91	100	107	116	123
Endurance and Range at 29.85 US gal (113 liters)								
Endurance		hh:mm	8:45	7:34	6:34	6:02	5:21	4:57
Range		NM	622	599	572	562	541	531
		SM	715	688	658	646	622	610
Endurance and Range at 23.78 US gal (90 liters)								
Endurance		hh:mm	6:58	6:02	5:14	4:48	4:16	3:56
Range		NM	495	477	456	448	431	423
		SM	569	548	524	515	496	486
Endurance and Range at 15.85 US gal (60 liters)								
Endurance		hh:mm	4:38	4:01	3:29	3:12	2:50	2:37
Range		NM	330	318	304	298	287	282
		SM	380	365	349	343	331	324
Endurance and Range at 7.93 US gal (30 liters)								
Endurance		hh:mm	2:19	2:00	1:44	1:36	1:25	1:18
Range		NM	165	159	152	149	144	141
		SM	190	183	175	172	165	162
Endurance and Range at 3.96 US gal (15 liters)								
Endurance		hh:mm	1:09	1:00	0:52	0:48	0:42	0:39
Range		NM	83	79	76	75	72	70
		SM	95	91	87	86	83	81

Altitude		ft	7,000					
Engine speed		rpm	4,200	4,500	4,800	5,000	5,300	5,500
Fuel consumption		US gal/h	3.30	3.86	4.44	4.86	5.49	5.89
		l/h	12.5	14.6	16.8	18.4	20.8	22.3
Airspeed	IAS	knot	62	69	79	84	92	98
		mph	71	79	91	97	106	113
	CAS	knot	63	70	78	83	90	95
		mph	72	81	90	95	104	109
	TAS	knot	69	77	85	91	99	105
		mph	79	89	98	105	114	121
Endurance and Range at 29.85 US gal (113 liters)								
Endurance		hh:mm	9:02	7:44	6:43	6:08	5:26	5:04
Range		NM	624	595	571	559	538	532
		SM	718	685	657	643	619	612
Endurance and Range at 23.78 US gal (90 liters)								
Endurance		hh:mm	7:12	6:09	5:21	4:53	4:19	4:02
Range		NM	497	474	455	445	429	424
		SM	572	545	523	512	493	487
Endurance and Range at 15.85 US gal (60 liters)								
Endurance		hh:mm	4:48	4:06	3:34	3:15	2:53	2:41
Range		NM	331	316	303	297	286	283
		SM	381	364	349	341	329	325
Endurance and Range at 7.93 US gal (30 liters)								
Endurance		hh:mm	2:24	2:03	1:47	1:37	1:26	1:20
Range		NM	166	158	152	148	143	141
		SM	191	182	174	171	164	162
Endurance and Range at 3.96 US gal (15 liters)								
Endurance		hh:mm	1:12	1:01	0:53	0:48	0:43	0:40
Range		NM	83	79	76	74	71	71
		SM	95	91	87	85	82	81

Altitude		ft	9,000					
Engine speed		rpm	4,200	4,500	4,800	5,000	5,300	5,500
Fuel consumption		US gal/h	3.22	3.78	4.33	4.76	5.39	5.76
		l/h	12.2	14.3	16.4	18.0	20.4	21.8
Airspeed	IAS	knot	57	64	73	79	86	92
		mph	66	74	84	91	99	106
	CAS	knot	59	65	73	78	85	90
		mph	68	75	84	90	98	104
	TAS	knot	67	74	83	89	97	103
		mph	77	85	95	102	112	118
Endurance and Range at 29.85 US gal (113 liters)								
Endurance		hh:mm	9:16	7:53	6:53	6:16	5:32	5:10
Range		NM	621	584	572	558	537	534
		SM	714	672	658	642	618	614
Endurance and Range at 23.78 US gal (90 liters)								
Endurance		hh:mm	7:23	6:17	5:29	4:59	4:24	4:07
Range		NM	495	465	456	445	428	425
		SM	569	535	524	511	492	489
Endurance and Range at 15.85 US gal (60 liters)								
Endurance		hh:mm	4:55	4:11	3:39	3:19	2:56	2:45
Range		NM	330	310	304	296	285	283
		SM	379	357	349	341	328	326
Endurance and Range at 7.93 US gal (30 liters)								
Endurance		hh:mm	2:27	2:05	1:49	1:39	1:28	1:22
Range		NM	165	155	152	148	143	142
		SM	190	178	175	170	164	163
Endurance and Range at 3.96 US gal (15 liters)								
Endurance		hh:mm	1:13	1:02	0:54	0:49	0:44	0:41
Range		NM	82	78	76	74	71	71
		SM	95	89	87	85	82	81

5.6 Airspeed indicator system calibration

IAS	CAS
knot	
30	35
35	39
40	44
45	48
50	53
55	57
60	62
65	66
70	71
75	75
80	79
85	84
90	88
95	93
100	97
105	102
110	106
115	111
120	115
125	120
130	124
135	129
140	133

IAS	CAS
mph	
35	41
40	45
45	49
50	54
55	58
60	63
65	67
70	72
75	76
80	81
85	85
90	89
95	94
100	98
105	103
110	107
115	112
120	116
125	121
130	125
135	130
140	134
145	139
150	143
155	148
160	152

5.7 Demonstrated wind performance

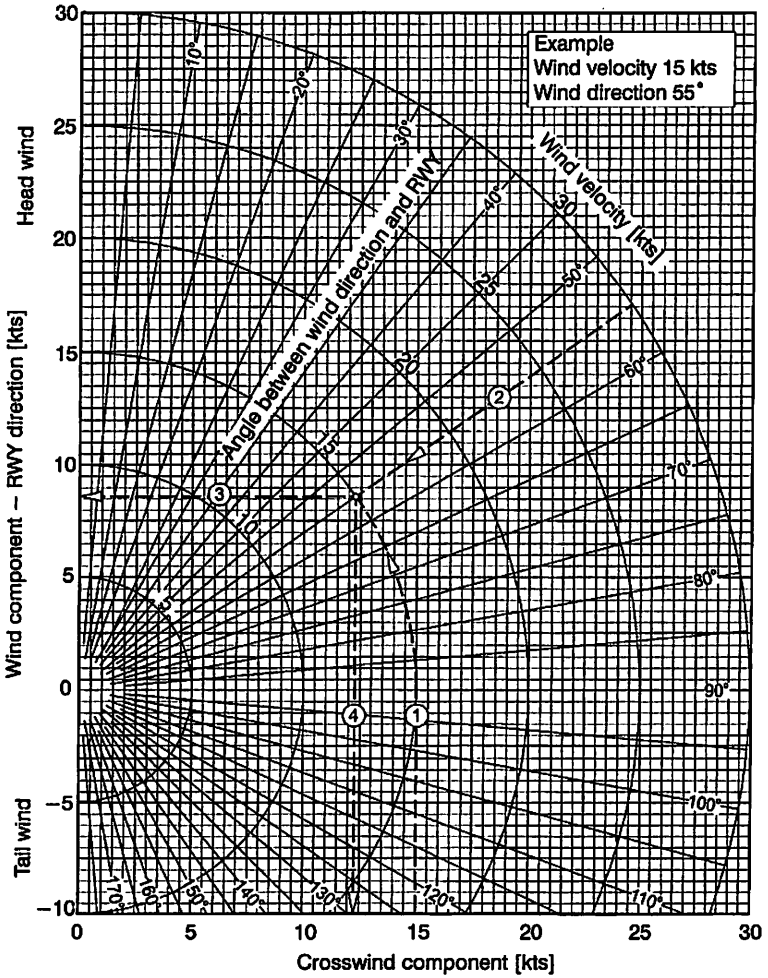
Max. demonstrated headwind velocity for take-off and landing:

24 [knot]

Max. demonstrated crosswind velocity for take-off and landing:

12 [knot]

Wind components figure



Example: *1. Wind velocity..... 15 knots* *3. Headwind component..... 8.6 knots*
2. Wind direction..... 55° *4. Crosswind component..... 12.3 knots*

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SECTION 6

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6. WEIGHT AND BALANCE

6.1 Introduction

This section contains weight and balance records and the payload range for safe operation of *SportCruiser* aircraft.

Procedures for weighing the aircraft and the calculation method for establishing the permitted payload range are contained in FAA Aviation Advisory Circular AC.43.13 – 1B.

6.2 Airplane weighing procedure

1. Preparation

- remove all impurities from the aircraft as well as further undesirable objects
- inflate tires to recommended operating pressure
- drain fuel from fuel installation
- add oil, hydraulic and cooling liquid up to the maximum specified value
- retract wing flaps, close the canopy and other lids and covers, remove control surfaces blocking
- level the airplane according to the rivet line located on the fuselage (on LH and RH sides) under the canopy frame

2. Leveling

- Place scales under each wheel
- Deflate the nose tire and/or lower or raise the nose strut to properly center the bubble in the level.

3. Weighing

- With the airplane level and brakes released, record the weight shown on each scale. Deduct the tare, if any, from each reading.

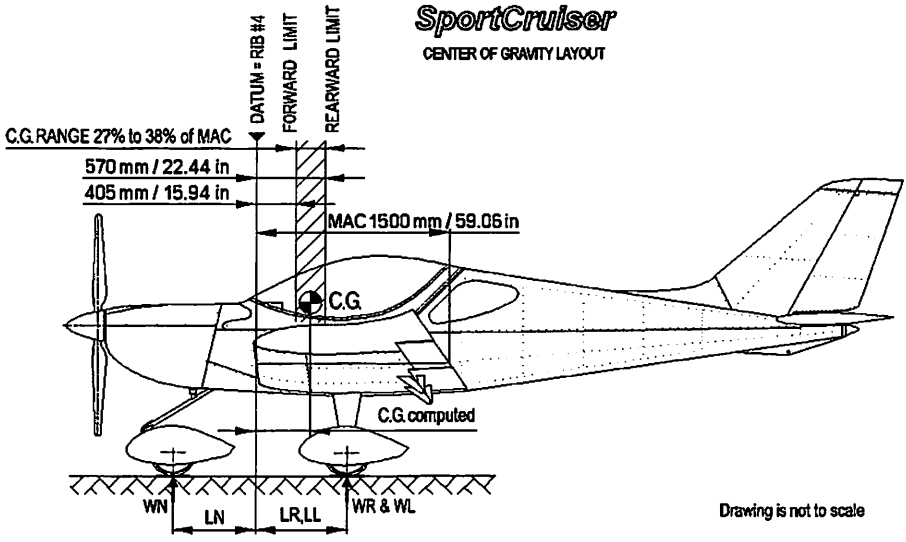
4. Measuring

- Obtain measurement LR and LL by measuring horizontally (along the airplane center line) from a line stretched between the Rib No. 4.
- Obtain measurement LN by measuring horizontally and parallel to the airplane center line, from center of nose wheel axle left sides, to a plumb bob dropped from the Rib No. 4. Repeat on right side and average the measurements.

5. Using weights from item 3. and measurements from item 4. the airplane weight and C.G. can be determined.

6. Basic Empty Weight may be determined by completing appropriate table.

6.3 Weight and balance C.G. layout



6.4 Operating weights and loading

Max. takeoff weight	*1,320 [lb]*	*(600 [kg])*
Max. landing weight	*1,320 [lb]*	*(600 [kg])*
Max. weight of fuel	*180 [lb]*	*(82 [kg])*
Max. baggage weight in rear fuselage	*40 [lb]*	*(18 [kg])*
Max. baggage weight in each wing locker	*44 [lb]*	*(20 [kg])*
Empty weight (minimum equipment)	*760 [lb]*	*(345 [kg])*

NOTE

Actual Empty weight is shown in Section 9, Supplement No. 02

Number of seats	*2*
Minimum crew	*1* pilot on the left seat
Minimum crew weight	*95 [lb]* *(43 [kg])*
Maximum crew weight on each seat	*253 [lb]* *(115 [kg])*

6.5 C.G. range and determination

Aircraft C.G. range:

Operating C.G. range	*27 to 38 [%]*	of MAC
	15.94 to 22.44 [in] (405 to 570 [mm])	of MAC
Empty weight C.G. range	*28 to 32 [%]*	of MAC
	16.54 to 18.90 [in] (420 to 480 [mm])	of MAC

Aircraft C.G. determination:

NOTE

Actual Weight and Balance record is shown in Section 9, Supplement No. 02.

Blank form of Weight & Balance record

AIRCRAFT EMPTY C.G.	ITEM	WEIGHT [lb/kg]	ARM [in/mm]	MOMENT (WEIGHT x ARM)
	RIGHT MAIN WHEEL	W_R=	L_R=	
	LEFT MAIN WHEEL	W_L=	L_L=	
	NOSE WHEEL	W_N=	L_N= - negative arm	-
	COMPUTED C.G. EMPTY	Empty weight: W_E= [lb/kg]	C.G.= [in/mm] [%]MAC	Aircraft moment: M_E =

AIRCRAFT C.G.	WEIGHT [lb/kg]	ARM [in/mm]	MOMENT (WEIGHTxARM)
EMPTY AIRCRAFT		-------	
PILOT		27.56 / 700	
PASSENGER		27.56 / 700	
BAGGAGE COMPARTMENT - A		51.58 / 1,310	
BAGGAGE COMPARTMENT - B		70.87 / 1,800	
WING LOCKERS		23.62 / 600	
FUEL TANKS		7.09 / 180	
TOTAL	W_T= [lb/kg]		M_T=
TAKEOFF WEIGHT	[lb/kg]		C.G.= [in/mm] [%] MAC

NOTE:

EMPTY WEIGHT INCLUDING OIL, COOLANT AND HYDRAULIC FLUID.

MAXIMUM FUEL QUANTITY IN WING TANKS (180.62LB=30.1US GAL / 82.1KG=114L) IS USED FOR MOST FORWARD C.G. CALCULATION.

MINIMUM FUEL QUANTITY IN WING TANKS FOR 30 MINUTES FLIGHT (22.2LB=3.7US GAL / 10.1KG=14L) IS SUBTRACTED FROM MTOW (1,320LB / 600KG). MOST REARWARD C.G. CALCULATION IS DONE WITH ZERO FUEL QUANTITY (AFTER FUEL DEPLETION).

Max. takeoff weight : *1,320 [lb] (600 [kg])*

Max. weight in baggage compartment A+B : *40 [lb] (18 [kg])*

Max. weight in wing lockers together : *88 [lb] (40 [kg])*

Empty weight C.G. range : *16.54 to 18.90 [in] (420 to 480 [mm]) / 28 to 32 [%] of MAC*

Operating C.G. range : *15.94 to 22.44 [in] (405 to 570 [mm]) / 27 to 38 [%] of MAC*

Maximum useful weight:

$W_{Max.\ Useful} = W_{Max.\ Takeoff} - W_E$

$W_{Max.\ Useful} = 1,320$ [lb] (600 [kg]) – =_____ [lb]/[kg]

This useful weight must be never exceeded!

NOTE: MAXIMUM USEFUL WEIGHT INCLUDING PILOT, PASSENGER, BAGGAGE AND FUEL.

$$\text{Aircraft C.G.} = \frac{M_E\,(M_T)}{W_E\,(W_T)}\ [in/mm] \times \frac{100}{MAC}\ [\%]$$

Registration:
Serial No.:
Date:
By:

6.6 Permitted payload range table

NOTE

Actual Permitted payload range table is shown in Section 9, Supplement No. 02.

Blank form of Permitted payload range table

SportCruiser			Serial number :				
FUEL	gauges together		for 30 min flight	1 / 4	1 / 2	3 / 4	1
	volume	US gal	3.7	7.5	15.1	22.6	30.1
		liter	*14*	*28.5*	*57*	*85.5*	*114*
	weight	lb	22.2	45.1	90.3	135.4	180.6
		kg	*10.1*	*20.5*	*41*	*61.6*	*82.1*
			Permitted crew weight				
BAGAGE	No baggage	lb					
		kg					
	½ rear (A) **20 [lb]** *(9 [kg])*	lb					
		kg					
	rear (A) **40 [lb]** *(18 [kg])*	lb					
		kg					
	½ wing lockers **44 [lb]** *(20 [kg])*	lb					
		kg					
	½ rear (A) + ½ wing lockers **64 [lb]** *(29 [kg])*	lb					
		kg					
	rear (A) + ½ wing lockers **84 [lb]** *(38 [kg])*	lb					
		kg					
	wing lockers **88 [lb]** *(40 [kg])*	lb					
		kg					
	½ rear (A) + wing lockers **108 [lb]** *(49 [kg])*	lb					
		kg					
	rear (A) + wing lockers **128 [lb]** *(58 [kg])*	lb					
		kg					

***Crew weight** = Max. Takeoff weight - Empty weight - Baggage weight - Fuel weight*

Crew weight values must be determined with regard on rearward C.G. limit.
Max. takeoff weight : 1,320 [lb] (600 [kg])

6.7 Installed equipment list

NOTE

Actual Installed equipment list is shown in Section 9, Supplement No. 02.

SECTION 7

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7. DESCRIPTION OF AIRPLANE AND SYSTEMS

7.1 General

This section provides description and operation of the aircraft and its systems.

SportCruiser aircraft is a single-engine, all metal, low-wing monoplane of semi-monocoque structure with two side-by-side seats. The airplane is equipped with a fixed tricycle undercarriage with castering nose wheel.

Some parts of airplane are made from fiberglass laminate.

7.2 Airframe

All-metal construction, stressed skin, single curvature metal skins riveted to stiffeners. Construction is of 6061-T6 aluminum sheet metal riveted to aluminum angles with Avex rivets. This high strength aluminum alloy construction provides long life and low maintenance costs thanks to its durability and corrosion resistance characteristics.

The wing has a high lift airfoil equipped with flaps.

7.3 Flight controls

The plane is equipped with a dual stick control, the adjustable rudder pedals with pedal hydraulic brakes for easy ground control of the castering nose wheel.

Lateral and longitudinal control movement is transferred by mechanical system of pull rods and levers.

Rudder control is controlled by pedals of foot control. The rudder is interconnected with foot control pedals by cable system.

The elevator and aileron trims are electrically actuated by buttons on the control stick.

Wing flaps are electrically actuated by the rocker switch located on the middle panel.

7.4 *Instrument panel*

Actual picture, description and data for follow items are shown in Section 9, Supplement No.02

- **Instrument panel layout**
- **Description of instrumentation and controls in the cockpit**
- **Instruments and Avionics**

NOTE

For instrument and avionics operating instructions refer to the documentation supplied with the instruments and avionics.

7.5 *Engine*

ROTAX 912 ULS engine *98.6 [hp] (73.5 [kW])* is installed in *SportCruiser.* Rotax 912 ULS is a 4-stroke, 4-cylinder, horizontally opposed, spark ignition engine with one central camshaft-push-rod-OHV. Liquid cooled cylinder heads, ram air cooled cylinders.

Dry sump forced lubrication. Dual contactless capacitor discharge ignition. The engine is fitted with an electric starter, AC generator and mechanical fuel pump. Prop drive via reduction gear with integrated shock absorber.

For information about engine performance, speeds and limits see :

- *Section 2, chapter 2.12 "Engine operating speeds and limits" in this POH*
- *Rotax "Operators manual" for engine type 912 series*

Engine controls

Throttle and Choke

Engine power is controlled by means of the THROTTLE lever and the CHOKE lever which are positioned in the middle channel between the seats side by side. Both levers are mechanically connected *(by cable)* to the flap on the carburetors. Springs are added to the throttle push rods to ensure that the engine will go to full power if the linkages fail.

Carburetor preheating

Heated air streaming from a heat exchanger to the carburetor through the airbox. The control lever is installed on the middle panel.

Ignition switch

Ignition switch must be on "BOTH" position to operate the engine. For safety remove the key when engine is not running.

NOTE

Ignition system is independent of the power source and will operate even with Master switch and/or breaker OFF.

Engine instruments

EMS screen displays all "Engine Instruments" as follows:

- engine speed
- manifold pressure
- oil pressure and temperature
- exhaust gas temperature
- cylinder head temperature
- fuel pressure and flow

For information about engine instruments range and markings see:

- *Section 2, chapter 2.13 "Engine instruments markings".*

7.6 Propeller

Standard ***WOODCOMP KLASSIC 170/3/R*** three composite blades ground adjustable propeller is installed.

NOTE

For technical data refer to documentation supplied by the propeller manufacturer.

7.7 Landing gear

Aircraft is equipped with tricycle landing gear.

Main landing gear uses two fiberglass spring elements. Each main gear wheel is equipped with an independent, hydraulically operated, disc type brakes. Nose wheel is free castering. Steering is accomplished by differential application of individual main gear brakes.

7.8 Baggage compartment

The rear baggage compartment is located behind seats. It may accommodate up to *40 [lb] (18 [kg])*. This space is divided to two sections:

- **A** baggage compartment – lowered part of the baggage compartment, close to seats and
- **B** baggage compartment – raised part of the baggage compartment, further from seats.

Baggage compartment is fitted with four tie-down straps for baggage fixation.

Load heavy items in compartment A. and lighter items in compartment B.

Baggage may also be loaded into the baggage compartment inside each wing up to *44 [lb] (20 [kg])*, in each wing locker.

Make sure that baggage does not exceed maximum allowable weight, and that the aircraft C.G. is within limits with loaded baggage.

NOTE

The baggage compartment in wing lockers are not waterproof.

CAUTION

All baggage must be properly secured.

7.9 Seats and safety harnesses

Side-by-side seating. Seat cushions are removable for easy cleaning and drying. Four point safety belts provided to each seat. Additional seat upholstery to raise the small pilot or move him forward is optional.

NOTE

Prior to each flight, ensure that the seat belts are firmly secured to the airframe and that the belts are not damaged. Adjust the buckle to a central position on the body.

7.10 Canopy

Access to the cabin is from both sides. Make sure that the canopy is latched and mechanism is securely locked into position on both sides before operating the aircraft.

7.11 Fuel system

Each tank is equipped with a vent outlet, finger screen filter and float sensor. Drain valve located in the lowest point of the each tank and on the bottom edge of the bulkhead, on the gascollator.

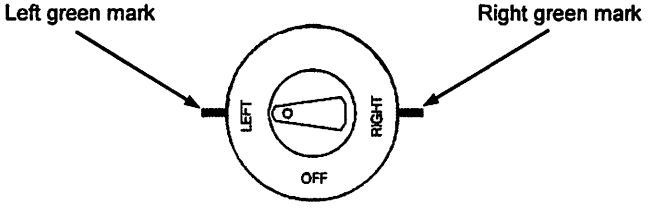
Fuel selector valve is on the central console in the cockpit.

The electric fuel pump is located on bulkhead and it is used for fuel line filling before engine starting.

Fuel return hose goes from the fuel pump into the left tank.

CAUTION

During operation, fuel valve shall be in "LEFT" or "RIGHT" tank position (position on green mark).



NOTE

*If left tank is full, start engine with the fuel selector set to **LEFT**. If you would start the engine with the fuel selector set to **RIGHT** and the left tank is full, than fuel bleed from the left tank vent may occur because a fuel return hose is led only into the left tank and returning fuel will overfill the left tank.*

CAUTION

Do not overfill the tanks to avoid fuel overflow through venting tubes.

7.12 Electrical system

Battery

The *12 [V]* battery is mounted on the front side of forward bulkhead.

Master switch

Master switch connects the electrical system to the *12 [V]* battery.

7.13 Pitot-static system

Standard ***AVIATIK WA037383 pitot-static probe*** is located below the left wing. Pressure distribution to the instruments is through flexible plastic hoses. Keep the pitot head clean to ensure proper function of the system.

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SECTION 8

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8. HANDLING AND SERVICING

8.1 Introduction

This section contains factory-recommended procedures for proper ground handling and servicing of the airplane. It also identifies certain inspection and maintenance requirements, which must be followed if the airplane is to retain that new-plane performance and dependability.

8.2 Ground handling

8.2.1 Parking

It is advisable to park the airplane inside a hangar or alternatively inside any other suitable space *(garage)* with stable temperature, good ventilation, low humidity and dust-free environment.

It is necessary to moor the airplane when it is parked outside a hangar. Also when parking for a long time, cover the cockpit canopy, possibly the whole airplane by means of a suitable tarpaulin.

8.2.2 Jacking

Since the empty weight of this aircraft is relatively low, two people can lift the aircraft easily. First of all prepare two suitable supports to support the aircraft.

It is possible to lift the aircraft by handling the following parts:

- By pushing the fuselage rear section down in the place of a bulkhead the fuselage front section may be raised and then supported under the firewall.
- By holding the fuselage rear section under a bulkhead the fuselage rear may be raised and then supported under that bulkhead.
- To lift up a wing, push from underneath that wing ***only*** at the main spar area. Do not lift up a wing by handling the wing tip.

8.2.3 Road transport

The aircraft may be transported after loading on a suitable car trailer. It is necessary to dismantle the wings before road transport. The aircraft and dismantled wings should be attached securely to protect these parts against possible damage.

8.3 Towing instructions

To handle the airplane on ground use the *Tow Bar*, or if pushing the airplane by hand, push on the aft fuselage, placing your hands over an area of skin supported by a bulkhead.

CAUTION

Avoid excessive pressure at the airplane airframe-especially at control surfaces. Keep all safety precautions, especially in the propeller area.

8.4 Tie-down instructions

The airplane should be moored when parked outside a hangar after the flight day. The mooring is necessary to protect the airplane against possible damage caused by wind and gusts.

For this reason the aircraft is equipped with mooring eyes located on the lower surfaces of the wings.

Tie-down procedures:

1. Fuel Selector close, Master switch and other switches switched OFF, Ignition switch switched OFF.
2. Fix the hand control using e.g. safety harness
3. Close air vent
4. Close and lock canopy
5. Moor the aircraft to the ground by means of a mooring rope passed through the mooring eyes located on the lower surfaces of the wings and below rear fuselage.

NOTE

In the case of long term parking, especially during winter, it is recommended to cover the cockpit canopy or possibly the whole aircraft by means of a suitable tarpaulin attached to the airframe.

8.5 Servicing operating fluids

See appropriate chapters in the ROTAX engine Maintenance and Operator's manuals and *SportCruiser* aircraft Maintenance manual for more instructions.

8.5.1 Approved fuel grades and specifications

Recommended fuel type:

(refer to the ROTAX Operator's manual section 10.2.2 Fuel, Rotax Service Instruction SI-912-016)

MOGAS

European standard	- min. RON 95, EN 228 Super, EN 228 Super plus
US standard	- ASTM D4814
Canadian standard	- min. AKI 91, CAN/CGSB-3.5 Quality 3

CAUTION

Fuels that contain more than 5% ethanol blend have not been tested and are not permitted for use.

AVGAS

US standard - AVGAS 100 LL (ASTM D910)

AVGAS 100 LL places greater stress on the valve seats due to its high lead content and forms increased deposits in the combustion chamber and lead sediments in the oil system. Thus it should only be used in case of problems with vapor lock or when other types of gasoline are unavailable.

Fuel volume:

Wing fuel tanks volume ..... *2x15.06 [US gal] (2x57 [liter])*
Unusable fuel quantity ..... *2x0.13 [US gal] (2x0.5 [liter])*

8.5.2 Approved oil grades and specifications

Recommended oil type:

(refer to the Rotax Operator's manual section 10.2.3 Lubricants, Rotax Service Instruction SI-912-016)
Motorcycle 4-stroke engine oil of registered brand with gear additives.
Use only oil with API "SG" classification or higher!
Use multi-grade oil. Use of mineral oil is not recommended.

Type of oil used by aircrafts manufacturer:

- see Section 9, Supplement No. 02

Oil volume:

Minimum ..... *0.87 [US gal] (3.3 [liter])*
Maximum ..... *1.0 [US gal] (3.8 [liter])*

8.5.3 Approved coolant grades and specifications

Recommended coolant type:

(refer to the Rotax Operator's manual section 10.1.2 Operating speeds and limits and section 10.2.1 Coolant, Rotax Installation manual section 12 Cooling system, Rotax Service Instruction SI-912-016)

In principle, 2 different types of coolant are permitted:

- Conventional coolant based on ethylene glycol
- Waterless coolant based on propylene glycol

WARNING
The coolant concentrate (propylene glycol) may not be mixed with conventional (glycol/water) coolant or with additives!
Non observance can lead to damages to the cooling system and engine.

Type of coolant used by aircrafts manufacturer:

- see Section 9, Supplement No. 02

Coolant liquid volume:

It is approximately.....*0.66 [US gal]* *(2.5 [liter])*

8.6 Cleaning and care

Use efficient cleaning detergents to clean the aircraft surface. Oil spots on the aircraft surface *(except the canopy!)* may be cleaned with petrol.

The canopy may only be cleaned by washing it with a sufficient quantity of lukewarm water and an adequate quantity of detergents. Use either a soft, clean cloth sponge or deerskin. Then use suitable polishers to clean the canopy.

CAUTION
*Never clean the canopy under "dry" conditions and **never** use petrol or chemical solvents!*

Upholstery and covers may be removed from the cockpit, brushed and eventually washed in lukewarm water with an adequate quantity of detergents. Dry the upholstery thoroughly before insertion into the cockpit.

CAUTION
In the case of long term parking, cover the canopy to protect the cockpit interior from direct sunshine.

8.7 Assembly and disassembly

Refer to the *SportCruiser* aircraft Maintenance manual and the *SportCruiser* aircraft Assembly photo manual.

8.8 Aircraft inspection periods

Periods of overall checks and contingent maintenance depends on the condition of the operation and on overall condition of the airplane.

Inspections and revisions should be carried out in the following periods, at least:

- after the first 25 flight hours
- after every 50 flight hours
- after every 100 flight hours or at least annual inspection

Refer to the *SportCruiser aircraft Maintenance manual* for aircraft maintenance.

Refer to the *Rotax engine Maintenance manual* for engine maintenance.

Maintain the propeller according to its manual.

All repairs and maintenance should be made in accordance with AC 43.13-1B.

8.9 Aircraft alterations or repairs

It is recommended to contact the airplane manufacturer prior to any alternations to the aircraft to ensure that the airworthiness of the aircraft is not violated. Always use only the original spare parts produced by the airplane (engine, propeller) manufacturer.

If the aircraft weight is affected by any alternation, a new weighing is necessary, then record the new empty weight into the Weight and Balance record / Permitted payload range and up-date the placard showing weights in the cockpit.

SECTION 9

TABLE OF CONTENTS

9. SUPPLEMENTS

9.1 List of inserted supplements 9-2
9.2 Inserted supplements 9-2

9. SUPPLEMENTS

This section contains the appropriate supplements necessary to safely and efficiently operate the aircraft when equipped with various optional systems and equipment not provided with the standard airplane.

9.1 List of inserted supplements

Date	Suppl. No.	Title of inserted supplement	Revision No.
11/02/01	01	Aircraft Flight Training Supplement	-
11/02/01	02	Aircraft specification S/N: *P1001079*	-

9.2 Inserted Supplements

Supplement No. 01

Aircraft Flight Training Supplement

Introduction

The *SportCruiser* flying characteristics and behavior are similar to other single engine aircraft.
Following training procedure is applicable if the pilot is holder of PPL or LSA Pilot License.
The training flight hours are recommended minimum and depends on the Flight Instructor if student pilot is ready to continue on in next training step.
Training can be performed by Flight Instructor or by the experienced pilot who has minimum 20 hours on the *SportCruiser*.

Type Rating Training Procedure:

Ground Training

Before practical Flight Training the pilot has to get familiar with following procedures and documentation:

- *Pilot's Operating Handbook (POH)*
- *Aircraft Maintenance manual*
- *Aircraft preflight inspection procedure*
- *Control Checklists*
- *Radio, avionics, aircraft and engine controls procedures*
- *Differences in control and aircraft handling*
- *Emergency procedures*

Flight training program *(recommended):*

Flight Training Procedure		*Dual*		*Solo*	
		Flights	*Time*	*Flights*	*Time*
1.	*Check flight*	1	30'	-	-
2.	*Pattern training flights up to 1,000 ft AGL*	4	20'	3	15'
3.	*Pattern training flights up to 500 ft AGL*	4	20'	3	15'
4.	*Stall speed, 45°turns, side slips*	1	30'	1	45'
5.	*Emergency landing training*	4	20'	3	15'
Total:		***14***	***2 hr***	***10***	***1,5 hr***

Flight Training Procedure - *description*:

1. Check flight
Student Pilot will fly the airplane in local flight, instructor giving advice as necessary.

2. *Pattern training flights up to 1,000 feet AGL*
High pattern procedures, instructor giving advice as necessary.

3. *Pattern training flights up to 500 feet AGL*
High pattern procedures, instructor giving advice as necessary.

4. *Stall speed, 45°turns, sideslips*
Stall speed flaps retracted and extended (landing configuration), sideslips at landing configuration.

5. *Emergency landing training*
Emergency procedures and landing to 1/3 of runway.

Note:
During solo flights instructor is observing the student pilot on pattern and can advise by radio as necessary.

Endorsement:
Instructor will endorse the Type Rating to the Pilots Logbook, if required.

Supplement No. 02

AIRCRAFT SPECIFICATION

In this Supplement No. 02 – the Weight & Balance & Equipment is shown for real S/N of the aircraft.

Aircraft Registration number : ***N427R***

Aircraft Serial Number : ***P1001079***

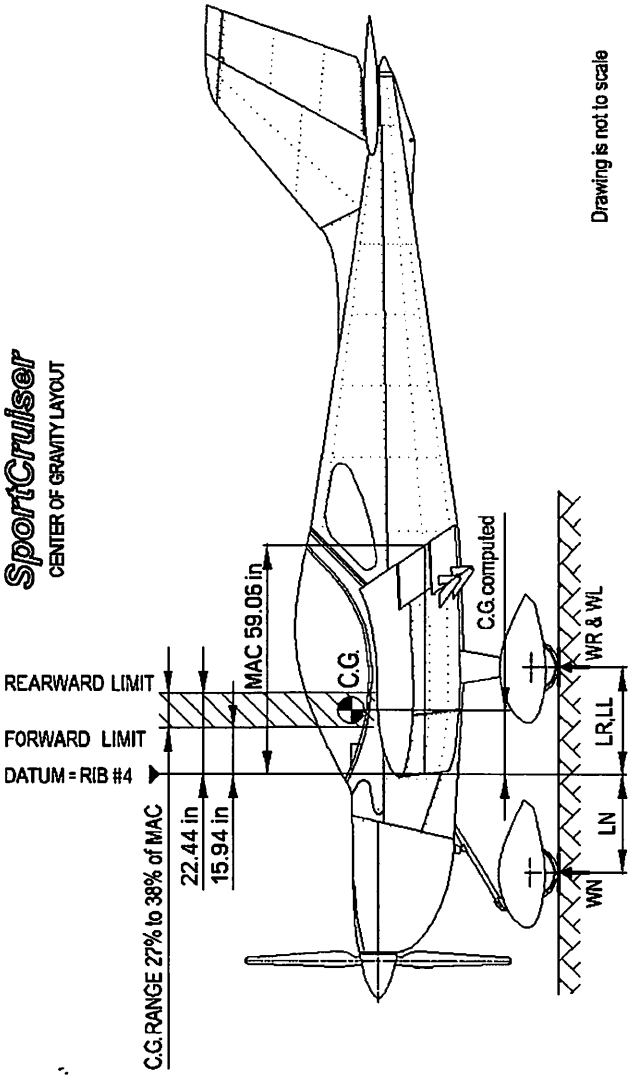
This Supplement must be attached to the POH during airplane operation.

Information in this Supplement completes or replaces information in the basic POH for the below mentioned parts only. Limitations, procedures and information not mentioned in this Supplement and included in the basic POH stay valid.

This Supplement completes information necessary for the airplane operation with equipment installed on the airplane.

6. WEIGHT AND BALANCE

6.3 Weight and balance C.G. layout



6.5 C.G. range and determination

Aircraft C.G. determination

WEIGHT & BALANCE RECORD
Empty Weight C.G. Check
of SportCruiser aircraft S/N : P1001079

AIRCRAFT EMPTY C.G.	ITEM	WEIGHT [lb]	ARM [in]	MOMENT (WEIGHT x ARM)
	RIGHT MAIN WHEEL	W_R= 329.12	L_R= 31.06	10,223.45
	LEFT MAIN WHEEL	W_L= 326.26	L_L= 31.10	10,147.46
	NOSE WHEEL	W_N= 207.02	L_N= - 28.07 negative arm	- 5,811.23
	COMPUTED C.G. EMPTY	**Empty weight:** W_E= **862.40** [lb]	**C.G.= 16.88** [in] **28.6** [%] MAC	**Aircraft moment:** M_E = **14,559.68**

NOTE: EMPTY WEIGHT INCLUDING OIL, COOLANT AND HYDRAULIC FLUID.

Empty weight C.G. range : *16.54 to 18.90 [in] / 28 to 32 [%] of MAC*

Max. takeoff weight : *1,320 [lb]*

Maximum useful weight:

$W_{Max.\ Useful} = W_{Max.\ Takeoff} - W_E$

$W_{Max.\ Useful} = 1,320\ [lb] - 862.4\ [lb] = \underline{\mathbf{457.6\ [lb]}}$

This useful weight must be never exceeded!

NOTE: MAXIMUM USEFUL WEIGHT INCLUDING PILOT, PASSENGER, BAGGAGE AND FUEL.

$$\text{Aircraft C.G.} = \frac{M_E}{W_E}\ [in] \times \frac{100}{MAC}\ [\%]$$

2010-12-16

CZECH SPORT AIRCRAFT QC 08

WEIGHT & BALANCE RECORD
Forward C.G. Check
of SportCruiser aircraft S/N : P1001079

FORWARD C.G.	*WEIGHT* [lb]	*ARM* [in]	*MOMENT* (WEIGHTxARM)
EMPTY AIRCRAFT	862.40	--------	14,559.68
PILOT	94.60	27.56	2,607.18
PASSENGER	0.0	27.56	0.0
BAGGAGE COMPARTMENT - A	0.0	51.58	0.0
BAGGAGE COMPARTMENT - B	0.0	70.87	0.0
WING LOCKERS	0.0	23.62	0.0
FUEL TANKS	180.62	7.09	1,280.60
TOTAL	W_T=1,137.62 [lb]		M_T= 18,447.45
TAKEOFF WEIGHT	1,137.62 [lb]		C.G.=16.22 [in] 27.5 [%] MAC

NOTE:
MAXIMUM FUEL QUANTITY IN WING TANKS (180.62LB=30.1US GAL) IS USED FOR MOST FORWARD C.G. CALCULATION.

Max. takeoff weight : *1,320 [lb]*

Max. weight in baggage compartment A+B : *40 [lb]*

Max. weight in wing lockers together : *88 [lb]*

Operating C.G. range : *15.94 to 22.44 [in] / 27 to 38 [%] of MAC*

$$\text{Aircraft C.G.} = \frac{M_T}{W_T}\ [in] \times \frac{100}{MAC}\ [\%]$$

2010-12-16

CZECH SPORT AC 08

WEIGHT & BALANCE RECORD
Rearward C.G. Check
of SportCruiser aircraft S/N : P1001079

REARWARD C.G.	*WEIGHT* [lb]	*ARM* [in]	*MOMENT* (WEIGHT x ARM)
EMPTY AIRCRAFT	862.40	--------	14,559.68
PILOT	190.08	27.56	5,238.60
PASSENGER	190.08	27.56	5,238.60
BAGGAGE COMPARTMENT - A	33.00	51.58	1,702.14
BAGGAGE COMPARTMENT - B	6.60	70.87	467.74
WING LOCKERS	15.62	23.62	368.94
FUEL TANKS	0.0	7.09	0.0
TOTAL	W_T=1,297.78 [lb]		M_T= 27,575.71
TAKEOFF WEIGHT	1,297.78 [lb]		C.G.=21.25 [in] 36.0 [%] MAC

NOTE:

MINIMUM FUEL QUANTITY IN WING TANKS FOR 30 MINUTES FLIGHT (22.2LB=3.7US GAL) IS SUBTRACTED FROM MTOW (1,320LB). MOST REARWARD C.G. CALCULATION IS DONE WITH ZERO FUEL QUANTITY (AFTER FUEL DEPLETION).

Max. takeoff weight : *1,320 [lb]*

Max. weight in baggage compartment A+B : *40 [lb]*

Max. weight in wing lockers together : *88 [lb]*

Operating C.G. range : *15.94 to 22.44 [in] / 27 to 38 [%] of MAC*

$$\text{Aircraft C.G.} = \frac{M_T}{W_T}\ [in] \times \frac{100}{MAC}\ [\%]$$

Serial No.:	*P1001079*
Date:	*2010-12-16*
By:	*Pavel Lukeš*

CZECH SPORT AIRCRAFT QC 08

6.6 *Permitted payload range table*

SportCruiser					Serial number : *P1001079*		
FUEL	gauges together		for 30 min flight	1 / 4	1 / 2	3 / 4	1
	volume	US gal	3.7	7.5	15.1	22.6	30.1
		liter	*14*	*28.5*	*57*	*85.5*	*114*
	weight	lb	22.2	45.1	90.3	135.4	180.6
		kg	*10.1*	*20.5*	*41*	*61.6*	*82.1*
			Permitted crew weight				
BAGGAGE	No baggage	lb	**435**	**413**	**367**	**322**	**277**
		kg	*198*	*188*	*167*	*146*	*126*
	½ rear (A) **20 [lb]** *(9 [kg])*	lb	**415**	**393**	**347**	**302**	**257**
		kg	*189*	*178*	*158*	*137*	*117*
	rear (A) **40 [lb]** *(18 [kg])*	lb	**395**	**373**	**327**	**282**	**237**
		kg	*180*	*169*	*149*	*128*	*108*
	½ wing lockers **44 [lb]** *(20 [kg])*	lb	**391**	**369**	**323**	**278**	**233**
		kg	*178*	*168*	*147*	*126*	*106*
	½ rear (A) + ½ wing lockers **64 [lb]** *(29 [kg])*	lb	**371**	**349**	**303**	**258**	**213**
		kg	*169*	*158*	*138*	*117*	*97*
	rear (A) + ½ wing lockers **84 [lb]** *(38 [kg])*	lb	**351**	**329**	**283**	**238**	**193**
		kg	*160*	*149*	*129*	*108*	*88*
	wing lockers **88 [lb]** *(40 [kg])*	lb	**347**	**325**	**279**	**234**	**189**
		kg	*158*	*148*	*127*	*106*	*86*
	½ rear (A) + wing lockers **108 [lb]** *(49 [kg])*	lb	**327**	**305**	**259**	**214**	**169**
		kg	*149*	*138*	*118*	*97*	*77*
	rear (A) + wing lockers **128 [lb]** *(58 [kg])*	lb	**307**	**285**	**239**	**194**	**149**
		kg	*140*	*129*	*109*	*88*	*68*

Crew weight = *Max. Takeoff weight - Empty weight - Baggage weight - Fuel weight*

Crew weight values must be determined with regard on rearward C.G. limit.
Max. takeoff weight : *1,320 [lb] (600 [kg])*

2010-12-16

CZECH SPORT QC 08 AIRCRAFT

6.7 *Installed equipment list* *of SportCruiser aircraft S/N : P1001079*

- *Rotax 912 ULS*
- *Woodcomp KLASSIC 170/3/R*
- *Dynon D100 EFIS*
- *Dynon D120 EMS*
- *Backup Airspeed indicator*
- *Backup Altimeter*
- *CM-24 Magnetic compass*
- *Garmin SL30 transceiver*
- *PS Engineering PM3000 intercom*
- *Garmin GTX330 transponder*
- *King AK451 ELT*
- *AirGizmos, Garmin 696 GPS*
- *Dynon HS34 HSI expansion module*
- *Dynon AP74 autopilot control unit*
- *Electric autopilot servos*
- *Antennas*
- *G -205 trim control and PTT on the control sticks*
- *Trims and flaps electrically actuated*
- *Kuntzleman wing tips strobe/nav. lights*
- *Landing light in cowl*
- *Adjustable pedals*
- *Dual hydraulic brakes*
- *Parking brake*
- *Wheel fairings tricycle*
- *Cabin heating*
- *Carburetor preheating*
- *Leather upholstery*
- *Paint*
- *BRS LSA softpack parachute*
- *Sunshade*

2010-12-16

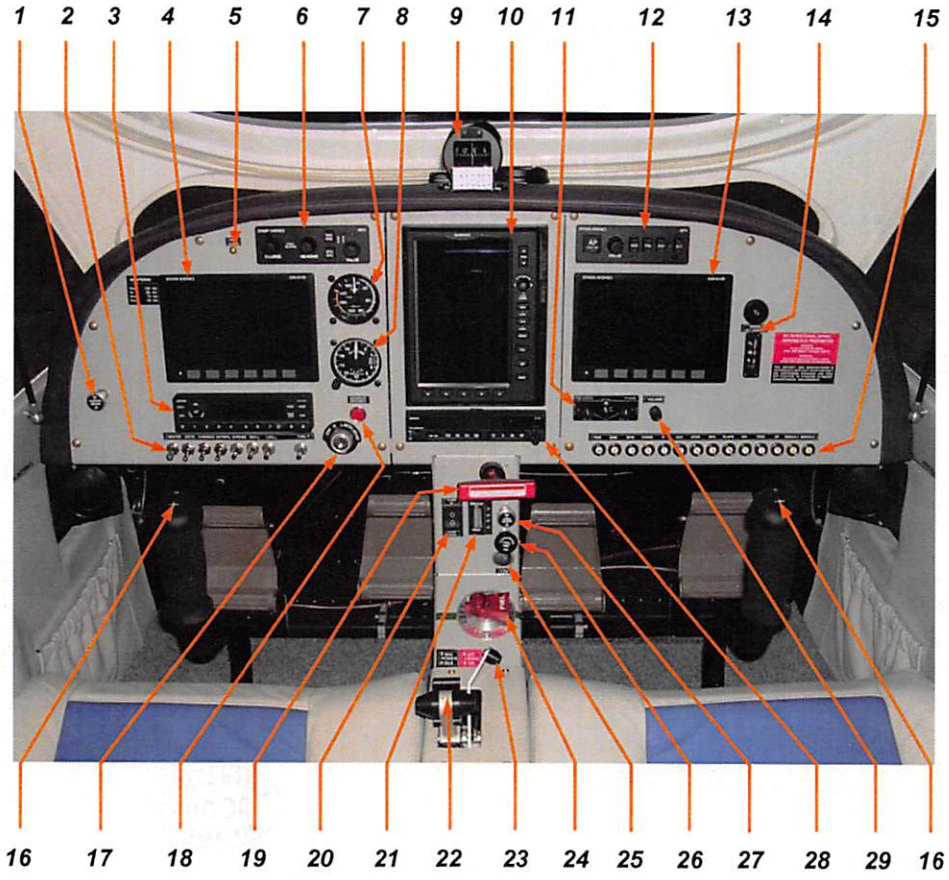
CZECH SPORT QC 08 AIRCRAFT

Date of

7. DESCRIPTION OF AIRPLANE AND SYSTEMS

7.4 *Instrument panel*

Instrument panel layout of *SportCruiser* aircraft S/N: *P1001079*



Description of instrumentation and controls in the cockpit

1	*Parking brake*	*16*	*PTT / elevator trim / aileron trim buttons*
2	*Switches / Circuit breakers**	*17*	*Ignition switch*
3	*Transponder*	*18*	*Autopilot disconnection button*
4	*Dynon EFIS*	*19*	*BRS release handle*
5	*EMS warning light*	*20*	*Flaps control switch*
6	*Dynon HS34 HSI expansion module*	*21*	*Flaps position indicator*
7	*Backup Airspeed indicator*	*22*	*Throttle*
8	*Backup Altimeter*	*23*	*Choke*
9	*Magnetic compass*	*24*	*Fuel selector valve*
10	*Garmin GPS*	*25*	*Socket 12V*
11	*PS Intercom*	*26*	*Carburetors preheating*
12	*Dynon AP74 autopilot control unit*	*27*	*Cabin heating*
13	*Dynon EMS*	*28*	*Transceiver*
14	*ELT control unit and buzzer*	*29*	*Dynon Alerts volume control*
15	*Circuit breakers*		

* Switches and circuit breakers detailed description is in this Supplement, page 10 of 14.

Date of issue

Instruments and Avionics

- *Dynon D100 EFIS*
- *Dynon D120 EMS*
- *Backup Airspeed indicator*
- *Backup Altimeter*
- *CM-24 Magnetic compass*
- *Garmin SL30 transceiver*
- *PS Engineering PM3000 intercom*
- *Garmin GTX330 transponder*
- *King AK451 ELT*
- *AirGizmos, Garmin 696 GPS*
- *Dynon HS34 HSI expansion module*
- *Dynon AP74 autopilot control unit*
- *Electric autopilot servos*
- *Antennas*

NOTE

For instrument and avionics operating instructions refer to the documentation supplied with the instruments and avionics.

Miscellaneous equipment

- *G -205 trim control and PTT on the control sticks*
- *Trims and flaps electrically actuated*
- *Kuntzleman wing tip strobe/nav. lights*
- *Landing light in cowl*
- *Adjustable pedals*
- *Dual hydraulic brakes*
- *Parking brake*
- *Wheel fairings tricycle*
- *Cabin heating*
- *Carburetor preheating*
- *Leather upholstery*
- *Paint*
- *BRS LSA softpack parachute*
- *Sunshade*

Description of switches and circuit breakers

MASTER		circuit breaker
INSTR.	*engine instruments*	switch
AVIONICS		switch
AUTOPIL.	*autopilot*	switch
STROBE		circuit breaker
NAV. L.	*navigation lights*	circuit breaker
LDG. L.	*landing light*	circuit breaker
FUEL P.	*fuel pump*	circuit breaker

8. HANDLING AND SERVICING

8.5 Servicing operating fluids

8.5.2 Approved oil grades and specifications

Type of oil used by aircrafts manufacturer:

AeroShell Oil Sport Plus 4

SAE: 10W-40 API: SL

8.5.3 Approved coolant grades and specifications

Type of coolant used by aircrafts manufacturer:

Specification: ASTM D 3306, VW TL 774C

Mixture ratio coolant / water: 50/50 [%]

Max. coolant temperature: 248 [°F] (120 [°C])

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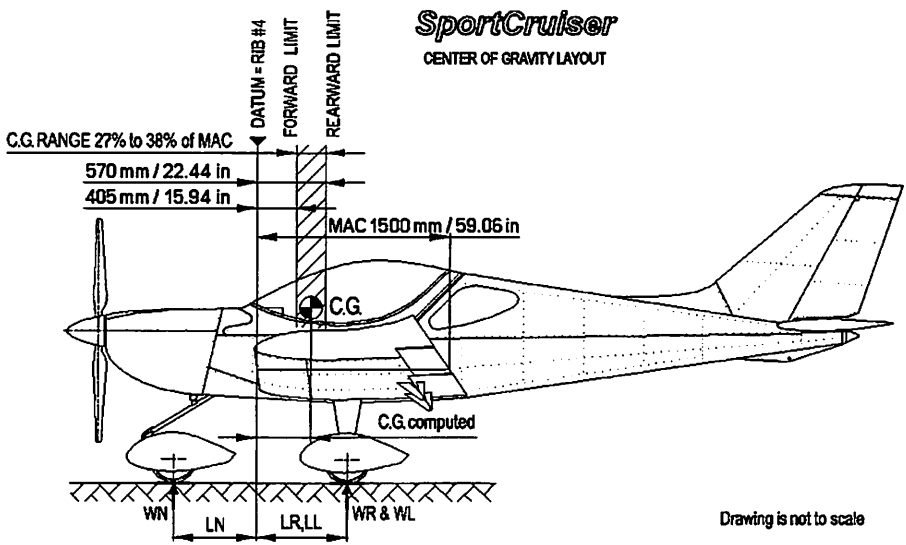

AIRCRAFT EMPTY C.G.	ITEM	WEIGHT [lb/kg]	ARM [in/mm]	MOMENT (WEIGHT x ARM)
	RIGHT MAIN WHEEL	W_R=	L_R=	
	LEFT MAIN WHEEL	W_L=	L_L=	
	NOSE WHEEL	W_N=	L_N= - *negative arm*	-
	COMPUTED C.G. EMPTY	*Empty weight:* W_E= [lb/kg]	C.G.= [in/mm] [%]MAC	*Aircraft moment:* M_E =

NOTE:

EMPTY WEIGHT INCLUDING OIL, COOLANT AND HYDRAULIC FLUID.

MAXIMUM FUEL QUANTITY IN WING TANKS (180.62LB=30.1US GAL / 82.1KG=114L) IS USED FOR MOST FORWARD C.G. CALCULATION.

MINIMUM FUEL QUANTITY IN WING TANKS FOR 30 MINUTES FLIGHT (22.2LB=3.7US GAL / 10.1KG=14L) IS SUBTRACTED FROM MTOW (1,320LB / 600KG). MOST REARWARD C.G. CALCULATION IS DONE WITH ZERO FUEL QUANTITY (AFTER FUEL DEPLETION).

AIRCRAFT C.G.	WEIGHT [lb/kg]	ARM [in/mm]	MOMENT (WEIGHTxARM)
EMPTY AIRCRAFT		-------	
PILOT		27.56 / 700	
PASSENGER		27.56 / 700	
BAGGAGE COMPARTMENT - A		51.58 / 1,310	
BAGGAGE COMPARTMENT - B		70.87 / 1,800	
WING LOCKERS		23.62 / 600	
FUEL TANKS		7.09 / 180	
TOTAL	W_T= [lb/kg]		M_T=
TAKEOFF WEIGHT	[lb/kg]		C.G.= [in/mm] [%] MAC

Max. takeoff weight : *1,320 [lb] (600 [kg])*

Max. weight in baggage compartment A+B : *40 [lb] (18 [kg])*

Max. weight in wing lockers together : *88 [lb] (40 [kg])*

Empty weight C.G. range : *16.54 to 18.90 [in] (420 to 480 [mm]) / 28 to 32 [%] of MAC*

Operating C.G. range : *15.94 to 22.44 [in] (405 to 570 [mm]) / 27 to 38 [%] of MAC*

Maximum useful weight:

$W_{Max.\ Useful} = W_{Max.\ Takeoff} - W_E$

$W_{Max.\ Useful}$ = 1,320 [lb] (600 [kg]) – =_____ [lb]/[kg]

This useful weight must be never exceeded!

NOTE: MAXIMUM USEFUL WEIGHT INCLUDING PILOT, PASSENGER, BAGGAGE AND FUEL.

$$\text{Aircraft C.G.} = \frac{M_E\,(M_T)}{W_E\,(W_T)}\ [in/mm] \times \frac{100}{MAC}\ [\%]$$

Registration:
Serial No.:
Date:
By:

Blank form of Permitted payload range

SportCruiser			Serial number :				
FUEL	gauges together		for 30 min flight	1 / 4	1 / 2	3 / 4	1
	volume	US gal	3.7	7.5	15.1	22.6	30.1
		liter	*14*	*28.5*	*57*	*85.5*	*114*
	weight	lb	22.2	45.1	90.3	135.4	180.6
		kg	*10.1*	*20.5*	*41*	*61.6*	*82.1*
			Permitted crew weight				
BAGGAGE	No baggage	lb					
		kg					
	½ rear (A) **20 [lb]** *(9 [kg])*	lb					
		kg					
	rear (A) **40 [lb]** *(18 [kg])*	lb					
		kg					
	½ wing lockers **44 [lb]** *(20 [kg])*	lb					
		kg					
	½ rear (A) + ½ wing lockers **64 [lb]** *(29 [kg])*	lb					
		kg					
	rear (A) + ½ wing lockers **84 [lb]** *(38 [kg])*	lb					
		kg					
	wing lockers **88 [lb]** *(40 [kg])*	lb					
		kg					
	½ rear (A) + wing lockers **108 [lb]** *(49 [kg])*	lb					
		kg					
	rear (A) + wing lockers **128 [lb]** *(58 [kg])*	lb					
		kg					

***Crew weight** = Max. Takeoff weight - Empty weight - Baggage weight - Fuel weight*

Crew weight values must be determined with regard on rearward C.G. limit.
Max. takeoff weight : 1,320 [lb] (600 [kg])

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